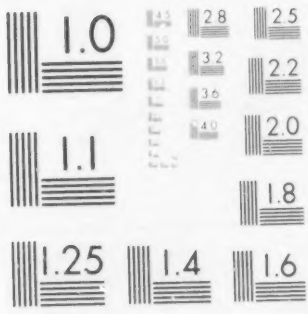

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Two significant themes are considered as part of a conceptual whole in this book: curriculum development and inservice education for teachers. Curriculum development is considered in many dimensions--the logic of subject matter, teacher opinion, student need, parent opinion, political climate, fiscal policy, psychological climate, ethnic values, organization theory, and research findings. Inservice education is regarded as inseparable from curriculum improvement and as a legitimate part of a teacher's regular duties as a professional. Nine essays present viewpoints of American and British educators under the following titles: (1) "Why Integrate Curriculum Development and Inservice Education?" (2) "A Permanently Tentative Curriculum;" (3) "Collaborative Research: Implications for Inservice Development;" (4) "Partnership for Curriculum Development: A Personal View;" (5) "Toward Ecology-Based Curriculum: A Model for Professional Growth Through Participatory Research and Development;" (6) "Multicultural Perspectives for Curriculum Development and Their Relationship to Inservice Education;" (7) "School-Focused Curriculum Development and Inservice Teacher Education;" (8) "Models of Multidimensional Curriculum Development and Inservice Education; (9) "Breakaway to Multidimensional Approaches." Appended is an outline for interactive ecology-based curriculum development (using mathematics as an example). (JD)

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Breakaway to Multidimensional Approaches

Integrating Curriculum Development and Inservice Education

Edited by
Roy A. Edelfelt
and
E. Brooks Smith

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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To

Margaret Lindsey

Mentor, friend, and esteemed colleague

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Foreword

This volume takes a much needed and challenging look at the relationship between curriculum development and inservice education. It does so by examining several approaches actually under way in schools. Most of these illustrations are experimental situations and thus are well documented. Such documentation will be especially helpful to any school or college interested in implementing or adapting the approach described.

A second significant aspect of this volume is the challenge posed to linear-sequential thinking in curriculum development. This challenge is perhaps especially timely in the 1970s as we recognize that no single track or unidimensional approach is adequate for the complexity of school improvement.

Teacher Corps hopes that this volume will be of special interest to Teacher Corps projects and other innovative programs of inservice teacher education. More important, Teacher Corps expects that the ideas contained herein will start a new surge of thinking about the educational, social, and political nature of improving schools. Teacher Corps is pleased to participate with the Association of Teacher Educators in supporting this important effort.

William L. Smith
Director
Teacher Corps
Washington, D.C.
May 1978

Preface

As the Association of Teacher Educators (ATE) enters a new era—and indeed a new era is dawning (e.g., solvency, renewed commitment, enlarged program concern, and broader membership in the teacher education community)—it is appropriate that ATE publish a book that may well mark entry into a new era of thinking. In this volume not only is inservice teacher education addressed, but the focus is integrating curriculum development and inservice education.

Several of many dimensions of curriculum development receive attention. Moving away from linear thinking in curriculum marks a new direction. At the same time the further professionalization of teaching is addressed by reporting ways in which teachers are engaged in decision-making, research, and other aspects of professional service.

We are indebted to James Steffensen of Teacher Corps for his support on this volume and to Jon Schaffarzick of the National Institute of Education for his advice and counsel. We also salute the work of Margo Johnson as production manager and technical editor.

Robert J. Stevenson
Executive Director
Association of Teacher Educators
Washington, D.C.
May 1978

1

Why Integrate Curriculum Development and Inservice Education?

Roy A. Edelfelt and E. Brooks Smith

The numerous efforts over the last several decades to improve school curriculum have not made enough difference in what happens to students in school. A number of reasons account for this state of affairs. Certainly one difficulty is our inability to keep pace with the rapid rate of change. Another is the fantastic growth of the population in the last half-century. But there are still other reasons that are more particular to education.

Curriculum development has almost always been piecemeal—for example, an overhaul of science courses at the high school level, the introduction of Head Start and Follow Through programs to give the disadvantaged child a better beginning, or a focus on the inquiry approach or the improvement of questioning. In addition, and perhaps more important, models for curriculum development have usually been linear, step-by-step, single-dimension activities. Tinkering with just a couple of dimensions—say, curriculum content and method—does not have much impact unless other dimensions—for example, inservice education of teachers, grouping of students, organization and use of time, teacher involvement in decision-making, and school-community relationships—are dealt with at the same time.

One of the strongest influences behind linear thinking in curriculum development was the division of the world of knowledge into disciplines or subjects, which eventually produced the subject-matter curriculum. Scholars, perhaps particularly in history and the sciences, arranged their work in logical, sequential, linear modes. The approach of their thinking and research became the arrangement of their writing. The easy extension of this rationale to school program was that

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the way the subject had been arranged by the scholar was the order in which it should be taught by the teacher and learned by the student. Or the way a research experiment proceeded was the way a learner could best make progress in grasping knowledge.

At another level of activity it has been assumed that research can be done on an educational problem or question, that the findings of that research can be developed into curriculum and instructional programs, and that those programs can then be disseminated to the teaching profession for implementation—the research, development, and dissemination model. Recently that straight line of attack has been turned into a circular line that adds assessment and evaluation of the impact of the program, which then become the bases for redesigning.

Yet another type of linear model begins with a needs assessment, followed by formulation of educational goals, statement of learning objectives in behavioral terms, prescription of means to meet each objective, and development of criterion-referenced exit tests to see how nearly the learner meets each objective. This model is the most recent form of the Tyler scheme for curriculum organization (Tyler, 1950).

Teacher education has also proceeded on a linear model. The assumption has been that teachers can be prepared to teach prior to and largely isolated from teaching—that preparation is a sequential process that begins with a good liberal education for enlightenment, is followed by specialization in a subject field, and is topped off with study of and practice in pedagogy. The product, it is assumed, is ready to teach and will remain current and vital throughout a career in teaching. Only recently has there been recognition that inservice study is necessary to keep abreast and find renewal. But even inservice education has proceeded mainly on linear models, from needs assessment or new program objectives to training workshops and testing to see if teachers did what they were told to do.

These practices in teacher education, although questionable and loudly criticized by teachers, are still prevalent. The fact that each teacher develops in his or her own unique way, that teaching styles vary and are directly related to personality, and that learning to teach cannot be linearly sequenced gets lip service but seems to make very little impact on teacher education. (Not that applying these ideas is either easy or inexpensive.)

All these models involve a logical, step-by-step process that blithely ignores the multivariant situation of ideas, perceptions, and emotions,

of people in different roles with different motives and orientations, and of things, classrooms, buildings, and geographies that make up the educational scene.

Acceptance of linear models by the public is understandable. For example, they see science as a major contributor to technological advance. When they observe technology in action in manufacturing and other production (conducted on a linear model), they assume that schooling can be much the same process. The acceptance of linear models is reinforced by the tradition of schools in an earlier age. The early curriculum of reading, ciphering, and rhetoric, in fact, was assumed to be logical and sequential in organization.

It is comfortable for parents to accept linear curriculums. Such curriculums seem to lead somewhere rather directly; they are explainable in terms of cause and effect; they are simple and straightforward. Unfortunately they are also chimeras. The whole enterprise of schooling is too complex to be reduced to a single line sequence. A few teachers and parents recognize this fact, but as yet, the number in either category is not large. One of the reasons for this book is to explore further the complicated multidimensional problem of school improvement and to increase the number of teachers and parents who want to deal with schooling as the complicated enterprise it is.

Because of the oversimplification of curriculum development the results of most improvement projects have been negligible. Very little has changed; indeed, development seems to be regressing. In most situations it is at a standstill, except for a frantic scurry back to the basics, whatever that means to each constituency that is scurrying.

It would be unfair to attribute back-to-basics thinking solely to the oversimplification inherent in linear models. The values of parents who seek what (they think) is primary and basic to being educated may have little to do with a linear model. A linear model is concerned with the steps one takes—how to get there, not why. But the two notions do fit together well. They both seek, and want to depend on, something of worth, something solid and stable and rational. These are noble criteria, except that there is a fallacy in assuming that a logical, linear model (in human learning) is always a solid basis on which to operate.

To dwell just another moment on the desire to find something solid and on the notion that there are certain basics, we are in an era of frightened and uncertain adults who want desperately for their offspring to get ready to handle life or at least to cope with it adequately. The anxiety, of course, grows from all the problems people face, the complexities of modern living. The easy way to cope with these com-

plexities is to deplore them and call for a return to more elemental things—but that is escape, the wrong choice. The better direction, though more complex, is to consider multiple dimensions and their interrelationships. This is not to say that nothing is basic. It is merely to suggest that the educated person should be constantly skeptical of things labeled basic and highly suspicious of most anything that is advertised as simple and linear if it applies to human learning.

Recent surveys and observations of the current curriculum development scene show an almost chaotic situation. After a couple of decades of rather intensive linear development, the result is a school- and classroom-situated curriculum of shreds and patches, with little universal rationale expressed beyond "this is what they tell us to do nowadays"—and no one is too clear about who "they" are or ought to be. The National Institute of Education Curriculum Development Task Force, in its survey report, *Current Issues, Problems, and Concerns in Curriculum Development* (Schaffarzick et al., 1976), discussed the problem of who is involved or should be involved in curriculum development. Respondents from all walks of curriculum life felt they were being put upon by someone else and felt "impotent" in the confused curriculum development situation. This report and some of its follow-up studies and papers dealt with a series of unanswered questions that would have been answerable in good part if the linear curriculum development model had been at least somewhat successful. Instead, the respondents seemed merely to be expanding on the questions. Such evidence that two decades of linear curriculum development have not resulted in any major changes or improvements in the school provides support for the argument that the forces impinging on curriculum development and the factors that have to be considered are multidimensional.

But rational support for an argument is not enough. Other influences must be taken into account. Education is now big business, a mass market. Many people and forces that might not have been interested in education 15 years ago are now watching and involved, at least in the economic dealings. In a word, education has become political. Decisions are made today as much on their political merits as on their educational merits, if not more.

The textbook industry has long been an influence in fostering linear, sequential approaches to curriculum. The way to make money in the textbook industry is to develop a series of textbooks that will be used in most of the schools in the country. Textbooks can be widely used in the same form. Printing more copies is the least expensive part of

textbook production, and big profits come after the first 2,000-3,000 copies. In recent years the large conglomerates have bought many of the textbook companies. So the political lobby on curriculum matters in Congress or at the state house is not just Ginn and Company or Bobbs-Merrill; it is Xerox or ITT. Political and economic forces as represented by the textbook industry are among the biggest powers behind a linear model of curriculum.

Unless the professional world in education, with community and student involvement, exercises influence in this chaotic predicament, advocates of the old linear approach will fill the vacuum with state-controlled linear systems mandated by law. Then a major blow to democratic and open-ended inquiry will have been struck in the guise of accountability models ensuring that every student in every state will call words and cipher on nearly the same day and same month of the school year.

School administrations can also be charged with fostering linear models. Mimicking business and industry, school administrations strive for logic, sequence, efficiency, and clear lines of authority. Instead, they should be promoting organization, structure, and management that best serve the purposes of a human service activity. Most accountability programs promote a linear model of input, throughput, and output in curriculum and instruction as well as plant planning. The result is large-enrollment schools where the focus is more on economic efficiency and ease of management than the quality of educational program. Getting school administrations to support planning, operating procedures, and outcomes that are not primarily countable is a difficult task these days. Even administrators who are persuaded that education is not merely a business often find that the foremost concern of school boards is economic efficiency. Making the case for a school program focused on the healthy growth of children and youth rather than business enterprise and efficiency can only be done when parents and citizens understand the choices and demand that boards of education and administrators provide such a program.

Additional Limitations of Linear Models

Despite the advocacy of linear models by many educational leaders and the enthusiastic adoption of them by many school administrations, they have been found wanting on several counts. A look at failings may help in proposing more adequate approaches.

Wanting in Accomplishing Any Lasting or Continuous Change in School Curriculum or Practice

Despite mammoth efforts at curriculum reform in the 1960s and 1970s in both the United States and Britain, the record of curriculum advancement and project survival is very disappointing. In this country Zacharias, Bruner, and others started with the subject-matter model—linear, sequential, scientific in its step-by-step approach. They and others learned that attention only to subject matter, even when it proved very exciting and stimulating to the teachers who were involved, did little to change schooling. As pedagogy became part of curriculum projects and National Defense Education Act and National Science Foundation institutes, the mix of subject matter and teaching methods proved quite positive for the teachers who were involved, particularly while they were under the influence of the institute training. But the school is a social system with its own norms and characteristics. With just one or a few teachers per school participating, it was difficult if not impossible to change the way the school operated, that is, how content was dealt with, teacher-student relationships, the role of the teacher and student, the way learning was evaluated, and the degree to which learner interest and ability were accommodated.

Many innovative curriculums, thoughtfully designed and holding great promise from their pilot experiments, had brief flings while scattered enthusiasts made adaptations. But most of these programs have now been abandoned, often with costly materials chucked or stored in back corners of closets. Other programs have experienced a dilution of their glorious objectives through shoddy compromises with conventionality. Of course, some of them deserved quick burial, but even the exciting, very practical, usually teacher-designed curriculums sponsored by Britain's Schools Council have barely outlived the first generation of their implementation. The linear approach simply has not been able to conceive a way to regenerate or re-create curriculums as times change and outside factors impinge, except to retrench, as most innovative textbook series of this period have done.

Wanting in Satisfying the "Accountability" Demands of an Uneasy and Cynical Public

The grandiose teaching-by-objectives schemes for curriculum development have only served to widen the credibility gap that they were intended to narrow. They have created more dissatisfaction and entrapped the education and citizen communities in a dead-end deadlock. Some slight gains have been reported in a few isolated skills through

the application of some reading programs; but advancement in the most important aspect of reading, comprehension, seems to be impregnable to these attempts. Indeed, a falling off of comprehension scores has been reported at the same time. This outcome might have been expected because comprehension is a multidimensional phenomenon involving internal contexts, personal constructs of both author and reader, and external cultural sets that cannot be reached by a linear approach. Some of the massive reading programs are fast becoming the dinosaurs of linear curriculum development models. Teachers say that the programs are overly redundant and meet with only perfunctory response from students as the novelty wears off. In addition, the programs consume the teacher's time with burdensome and petty record-keeping.

Of course, there are many motivations behind accountability. Some of them, such as the application of the business-industrial model, have little to do with education. In addition, adults in general and parents in particular have been so busy with their own progress (the acquisitive society) that they have taken too little time to follow the schooling of their offspring. There may even be a sense of guilt that drives parents to want someone to check on the attainments of their progeny because they themselves have not.

And schools have not done much to get parents and the community involved. Again the reason is preoccupation with their own (school) responsibilities rather than disinterest. Growth in the general population in the 20th century, for example, has been phenomenal, and the school population has grown even more rapidly than the general population. Not only have there been more children, but a much larger percentage have attended school.

Table 1. Growth in the U.S. Population and Public School Enrollment*

	Population (in thousands)	Public School Enrollment (in thousands)	High School Enrollment (in thousands)
1900	75,994	15,503	519
1910	91,972	17,813	9[illegible]5
1920	105,710	21,578	2,20[illegible]
1930	122,775	25,678	4,399
1940	131,669	25,433	6,601
1950	150,697	25,111	5,724
1960	180,000	36,038	11,499
1970	202,103	45,484	17,588

*Data are taken from National Education Association, National Commission on Teacher Education and Professional Standards, *Milestones in Teacher Education and Professional Standards* (Washington, D. C.: Author, 1970).

Some school superintendents have been so busy preparing for school bond issues, supervising school construction, buying equipment, and recruiting teachers that the main purposes of school have been delegated to subordinates or ignored.

Wanting in Enlivening the Inservice Education of Teachers and in Closing the Gap Between Research and Practice

Teachers are seeking power over their professional destiny. Their aspirations are manifested in a different self-concept, a social and political awareness, a desire to exercise power and be involved in decision-making. Because of this new assertiveness, workshops, courses, conference days, and other activities planned *for* teachers to correct their ways in meeting the "assessed" needs of clients or to learn to do what research says, will increasingly be labeled ineffective.

Teachers have been dutifully attending inservice education programs when they can pick up stipends, credits, or salary increments. All the while, it is now revealed, they have listened and watched but returned to the classroom and gone about their work as usual. Sometimes they have paid lip service to the administration's dreams of gains in academic achievement by adopting some gimmickry for show, but they have followed the same old formulas. Indeed, the teacher has been deprofessionalized, to the point that some proponents boast that their program will work without the teacher's interference. At best, teachers are being told that they can be conveyors and gatekeepers of the system. In many instances the curriculum designer's intent was good, but often it was misguided or poorly conceived. Again, this set of circumstances is a manifestation of not keeping attuned to what has happened to teachers, students, and schools, and of trying to do better what is already obsolete.

The result in many schools is a curriculum nearly in chaos, leaderless, and for all intents and purposes, teacherless. Again, the times have been out of joint in the sense that radical changes in the social, cultural, political, intellectual, and psychological worlds have stunned everyone, and humanity has had to face up to the prospects of energy blackouts, fratricidal racial wars, and total pollution of the planet. Education through constructive curriculum development and methods is at least one means over which we the profession and we the citizenry have some control to help humanity stave off disaster and reorient world directions.

It may be too strong to say that curriculum is leaderless. The mood of the times has caused leaders to be cautious and conservative.

School superintendents, for example, are being fired right and left; perhaps those who remain (or who arrive at new positions) are trying to keep from providing school boards with reasons for dismissal. Their caution, of course, curtails experimenting, innovation, and risk-taking and encourages economies and conformity. The very political nature of education is in large part responsible for the way educators are behaving. As a multidimensional approach to school improvement develops, there will be more attention to the governance of education and changes in the ways citizens and teachers work together to build programs that serve both the individual student and the common welfare. The governance of education needs to have sufficient autonomy and protection from political pressure while still being responsive to public demands and able to adjust to radical and rapid change.

Some Bright Spots and Light Ahead

The picture is not all dismal, though too nearly so to be safe. Efforts at school improvement are beginning to include multiple considerations. Below we take a brief look at some bright spots of the recent past in terms of dimensions not usually included in curriculum development. The rest of the book looks in some depth at several present-day efforts to make a multidimensional attack on curriculum development integrated with inservice education.

Man: A Course of Study (MACOS), developed at the Education Development Center in Cambridge, Massachusetts, is one bright spot. This multidimensional curriculum provides less linear sequence than most social studies curriculums. It requires the teacher to make many of the decisions on which units of the curriculum to use and most of the decisions on how topics are developed and which materials are used with a particular group of youngsters. *MACOS* was developed and tested with teachers, scholars, and teacher educators and requires orientation for those who want to use it. It is one curriculum project that has gone through dissemination and application without deprofessionalizing teachers. The intent is to study humans using not only the content and illustrations provided but also the experience and environment of the students in a particular class. *MACOS* is not the ultimate in multidimensional curriculum, but it is part of the breakaway.

Parenthetically *MACOS* also illustrates the resistance put up by some conservative people to altering and broadening curriculum so that it deals with some of the critical problems of life. The political battles over the future of *MACOS* suggest a dimension that cannot be ignored in the curriculum development process.

Breakthrough to Literacy is a British Schools Council project that has been unusually successful and also unusually popular, especially with teachers not involved in its development. It addresses problems that many teachers face and on which they have been asking for help—namely, how to get the nonreader and the slow reader reading when the usual ways are not working. The curriculum project teams, mainly classroom teachers, decided that the narrow, single-tracked "need" of improving reading skills of slow readers was in reality a multidimensional problem that they expressed as one of "literacy." This extension of the problem accepts the modern linguistic notion that reading skills are a very small part of the complex interrelatedness of thinking, talking, reading, and writing in children's language development.

The project created a guide and simple materials from which teachers can easily develop a program based on children's responses and their own inclinations in the local setting. It is an open-ended design providing many options for teachers and students.

Another American curriculum development project—*People and Technology*—also sponsored by the Education Development Center, showed much potential for sustaining power before it was stopped because of the withdrawal of government funding and because it may have been too elaborate in its use of costly but very interesting teaching materials. The important new dimension of this project, which only reached the paper stage, was its intent to have the culminating section of the curriculum be based on the local community. The exciting interdisciplinary themes developed in the first two sections would be extended and enriched through a locally planned program involving teachers, school and college teacher educators, university engineering faculty, and community, industrial, business, and labor leaders. The original base curriculum would then be re-created based on feedback from the local efforts to the design team through a network of schools and teacher centers involved in the curriculum project.

Recently some textbook publishers have been taking small steps toward the multidimensional approach by using teams of authors that include classroom teachers up to one-half of their membership. Also on these writing teams are teacher educators and liberal arts professors. At the initiation of a textbook series the team of authors meets with the staff of editors who in the past have done most of the formulating and writing. Together they build the themes, sequences, and method to be used. The authors write the lessons while the editors prepare the texts for the space allotments, making them "bookable." Certainly the anonymous, so-called market continues to play the major

role in determining what finally gets into textbook series. But there is a slight movement toward more collaborative efforts between the profession, the community, and textbook publishers. If teachers were to support it when they help select textbooks, it might be intensified.

Multidimensional approaches to curriculum development will cost money, and to be practical, commercial sources of support will have to be involved as well as public funds. Developing curriculum from students' questions about areas of knowledge and their experiences seems to be a very sensible way to start; but such an approach is a most rare occurrence. In fact, the first formal report of an extensive curriculum project along such lines appeared only recently (Landrum, 1976). Some investigators with a team of classroom teachers decided to reverse the Bruneresque approach of formulating questions for inquiry first and begin with children's questions. The study is discussed in Chapter 8.

In the chapters that follow there are a variety of models of curriculum development, none of them linear. In various ways the authors link curriculum development with the inservice education of teachers, sometimes so closely that where one begins and the other ends is not perceptible. Perhaps in such instances the words of John Dewey, "Learning is doing," are particularly appropriate.

The inclusion in this book of two chapters by British educators was deliberate. It was done mainly to illustrate different ways of thinking about and managing essentially the same problems. The British experience with inservice education and teacher centers should be particularly instructive for Americans who are about to embark on a similar, federally supported program. And as the likelihood of a United States Department of Education increases, the model of government facilitation represented in this book by the British Schools Council may be one to consider.

It is still too early to formulate principles or criteria that distinguish newly emerging approaches from older, linear models. Reasons why are discussed in the final chapter. Ultimately criteria should emerge. Indeed, they may begin to occur to the reader as he or she proceeds through this book. Certainly there are several efforts underway today that attempt to deal with more than one dimension.

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2

A Permanently Tentative Curriculum

Maja Apelman

> From the standpoint of the child, the great waste in the school comes from his inability to utilize the experiences he gets outside . . . while, on the other hand, he is unable to apply in daily life what he is learning in school. That is the isolation of the school—its isolation from life. (Dewey, 1915, p. 67)

What is curriculum? How is it developed and who should be developing it? My views on curriculum have evolved gradually over a period of some 20 years and have been shaped by my childhood school experiences, my professional training at Bank Street College of Education, and my work as classroom teacher, college instructor, and advisor of teachers in early childhood education. Two people have strongly influenced my thinking: Lucy Sprague Mitchell, founder and later president of Bank Street College, where I studied and taught for many years both in the children's school and in the college; and David Hawkins, director of the Mountain View Center for Environmental Education in Boulder, Colorado, where I have been working as an advisor for almost six years.

Both Mitchell's and Hawkins' educational theories lead me back to John Dewey. Mitchell told how as a young girl she first met Dewey: "Dewey gave me my first conception of experimental education. His influence on my thinking lasted from these youthful years on. It was in a large measure his influence that determined my interests and choice of a profession in later years" (1953, p. 74). Hawkins has repeatedly written about Dewey's importance: "No one today . . . can discuss education well without acknowledging that Dewey has been there already . . ." He laments the fact that Dewey's influence on educational theory and practice has been almost negligible: "In my

own view the correctness of Dewey's major position in the theory of education is, or ought to be, beyond dispute" (1974, p. 162).

What Mitchell and Hawkins took from Dewey's philosophy, how they developed his thinking and applied it in their own work with teachers and children, interests me very much. Here, however, I want to focus on how Dewey, Mitchell, and Hawkins viewed curriculum and how they saw the role of the teacher in curriculum development. Their views have provided the foundation for my practical work with teachers.

Dewey defined curriculum as "the formulated wealth of knowledge that makes up the course of study" in schools, and he stressed that its primary value was "*for the teacher, not for the child*" (italics mine). Knowing the content of the various subjects traditionally taught should enable the teacher "to determine the environment of the child and thus, by indirection to direct" (1902/1971, p. 31).

Mitchell proposed a method of curriculum-building for social studies that used as its main foundations a knowledge of children and a knowledge of the environment. The teacher's job is "to place the children in strategic positions for making explorations" (1934/1963, pp. 25-26). Curriculum material, she said, must be "permanently tentative . . . A fixed curriculum is an anomaly if we consider children and environment two of the cornerstones upon which a curriculum is built" (1951, p. 197).

Hawkins stated that teachers need to restructure their own understanding of subject matter to make it easier for different children to become interested and to offer children greater options for learning. Teachers, he said, must organize subject matter "for maximum accessibility [so that] it is easy to get into it from many, many directions, from many starting points and many levels of comprehension and insight" (1975, p. 15).

In the view of all three writers, then, curriculum is fluid, although never unplanned, and teachers are responsible for developing it. "To teach means to *facilitate* learning by surrounding the child with, and helping him into, situations where learning can take place" (Hawkins, 1974, p. 18).

I too believe that teachers must be involved in constructing their own curriculum, but it is a difficult and demanding task, and teachers need continuing help and support if they are to learn to do it well. In my present job as advisor I try to give this support to practicing teachers. My own development as a learner shows how I obtained some of the knowledge and skills that are basic to this work.

My Development as a Learner

My experience as a student stretched from an excellent first-grade classroom in Vienna during a period of educational reform (see Hein, 1975, pp. 112-118), through an incredible assortment of public, private, and boarding schools in four European countries, to my American education in two colleges and three graduate schools. I left a typical Austrian *Gymnasium* at the age of 15 (Hitler made that easy), hating what I considered useless, irrelevant, rote learning of subjects that did not interest me. After two years in England, one of them at Summerhill School, I emigrated to New York with my family and decided to try college. There I was able to choose my subjects, and I began to enjoy learning. I have not stopped enjoying it.

My first adult contact with the field of education was at Bank Street College, where a thorough understanding of young children's growth and development was central to teacher training. Therefore, I cannot think about curriculum without thinking about children. At Bank Street College I first learned about children in general, how they feel about themselves, their families, and the immediate world in which they live. I learned to observe children closely in the classroom, listen to their spontaneous language, value their work with materials, respect their thinking, and enjoy their curiosity. Above all, I learned not to expect all children to develop at the same rate and to accept the ups and downs of normal development in any one child.

Bank Street College's School for Children was not perfect, but it was truly a school for children. No one laughed at children although there was much laughter with them. No one talked down to children. All the adults—from janitor and cook to college and research staff—genuinely enjoyed children and consistently treated them with respect. In many school settings there is a large gap between child development theory and classroom practices. Relatively few education students have the opportunity to study in a setting that allows them to develop the kinds of attitudes toward children that at Bank Street College formed the basis for all subsequent studies.

After beginning to learn about children in general I learned to look at children in specific ways. What do individual children bring to school with them from past experiences? What is their socioeconomic background? What are the values of their families? What geographic settings have they lived in? How many siblings do they have? What events in their own brief history might have affected them in ways that teachers should know?

Mitchell believed that schools should begin where children are and build a curriculum for their growth from that point. The world in which young children live, their physical and social environments, should provide the content from which teachers select activities and materials for children's learning. "Since children's experiences begin in the immediate communities in which they are brought up and since these communities are functioning in terms of the present day culture, it is the school's job to begin with the children's own environment whatever or wherever it may be. The complications of the surrounding culture, instead of making this attack impossible, make it imperative" (1934/1963, p. 16).

How should young children study their environment? Mitchell placed her emphasis on the human aspects, on people's work. Children's interests in action and movement made this a natural focus. From studying work done in children's own homes, to watching work in their immediate neighborhoods, to exploring and understanding the larger "city housekeeping" of New York, to learning about work performed by other groups "long ago and far away," children would gradually expand their understanding of what Mitchell called human geography—"what the earth does to people and what people do to the earth":

> Everywhere people are working . . . everywhere [they are] using the earth . . . in their daily lives. Children everywhere are eating food which came from the earth . . . They are wearing clothes which, like food, workers somewhere have made through their work from some living things. They are living in houses built of earth materials, using machines made from underground deposits, moving over the surface of the earth on some kind of road, and using some method of communication with other people near or far away. These are basic patterns of our culture and of the culture of any people. The "hows" that lie behind these patterns of work interest children of all ages. (1951, p. 49)

In a curriculum based on studying the environment, children must be able to go out of the school. Mitchell considered field trips the basis of the curriculum in the years from about four to seven when children feel secure enough in their home environment to move out into their neighborhood and community, but are not yet ready to "carry on investigations in situations which are not immediately before them" (1934/1963, p. 22).

Bank Street College was located in Manhattan. The School for Children and others like it used the city as their laboratory. Trips to see coal delivered to homes and schools would be followed by trips to the

river to watch barges pulled by tugboats bring coal and other raw material to the city. Visits to neighborhood grocery stores preceded trips to wholesale produce markets where farmers came to sell their wares. On trips to bakeries or shoe repair shops children watched closely how some of their needs were taken care of, and at the same time they enjoyed the sights, smells, and sounds that went with this work. There are always machines in New York streets—diggers and loaders, cement mixers and cranes, sweepers and garbage trucks and snow plows, all performing work for the people of the city.

Students at Bank Street College were expected to become "human geographers," exploring and studying their own environment. We took many field trips—to the Fulton Fishmarket at 5 a.m., to huge incinerators that burn the city's tons of daily garbage, to produce auctions and construction sites. In earlier days students had gone as far as the Tennessee Valley Authority to study how such a gigantic project affected the land and people of that region.

Social studies, defined broadly as our relationship to one another and to our environment, was the core of the curriculum at Bank Street College. Mitchell had a strong commitment to democratic ideals and a deep sense of social justice. She expected teachers to develop a social philosophy that would guide them when they planned a curriculum for children. Teachers needed to think about the kind of world they wanted children to live in and how they could best prepare children for such a world. Social thinking started in the classroom. A good group life was the foundation from which a gradual, more mature understanding of varying family patterns and different cultures would grow. Cultural patterns, however, were always related to the environment that shaped them, and Mitchell always stressed the importance of a basic understanding of how the world functioned. The young child, she wrote,

> lives in a world of end-products with the functioning causes largely concealed. He is likely to grow up so used to unexplained end-products that he does not form the habit of seeking for causes, for underlying relationships . . . he is likely to grow up without thinking, without opportunity for experimentation . . . without understanding or even questioning familiar things . . . [If] the grownups closely associated with these modern children . . . accept their environment with an attitude almost equally unchallenging . . . children will have as little chance to explore their surroundings [or] to pursue a laboratory method in their classrooms as in their homes. (1934/1963, pp. 12-14)

Science obviously played an important role in Mitchell's thinking. Yet in practice, at least in the progressive schools that I knew in the

1950s and early 1960s, science did not receive sufficient emphasis. Although most early childhood classrooms had plants and animals, water, sand, and blocks, and children cooked, modeled maps, and worked with clay and wood, the science-learning possibilities inherent in these materials and activities were not sufficiently developed.

In my kindergarten classroom I brought in things from the natural world—leaves and shells and rocks—and I had materials to study physical forces—magnets, batteries, and thermometers. I studied science curriculum guides and learned science from children's books. In my own life I love the outdoors, mountains, beaches, forests, and I had learned to look closely at nature when I took walks with my young son. But not until I went to Boulder to work at the Mountain View Center for Environmental Education did I discover what science was all about. A new world opened up to me. The discovery jolted me, then left me feeling deprived for having lived so many years without knowing what there was to know. I had lived in a world of "end-products." I had stopped asking questions about things in the world. At Mountain View Center I soon began to ask again. Often I got exhausted. There was too much to learn. I wanted to know it all, but my mind could not absorb so much and I had to ration the intake from my immediate environment.

Science at Mountain View Center

Science is defined broadly at Mountain View Center to include all natural phenomena that occur in the environment. To help teachers learn about these phenomena the Center has created an environment richly stocked with a large variety of materials that will lead to investigations of sand, rocks and water, air and heat, balance, symmetry, light and color, growth, form and patterns—in nature, mathematics, and art. These topics seem to engage the interest of children at all ages and in all places if presented in an accessible and open-ended way.

Materials at Mountain View Center are arranged and displayed to invite handling and experimentation. For exploring the properties of water, there are siphons and syringes, valves and plastic tubes, objects to put into water (marbles, gravel, sand), containers to hold water, food coloring to trace the flow of water, T-joints to stop or divert the flow, and so on. For work with balancing, there are homemade fulcrums, boards of various lengths and shapes, heavy and light blocks, washers of all sizes, yardsticks, wire hangers, and Tinker-

toys. We have large quantities of marbles, poker chips, wooden cubes, golf tees with pegboards, and vinyl tiles in many geometric shapes—all for creating patterns. We look at artichokes and sunflowers to study nature's spiral designs, and we get involved with the physics of sound and the mathematics of weaving.

Why is there such a wealth of materials and why are they presented in such an open-ended way? Dewey said:

> The fundamental fallacy in methods of instruction lies in supposing that experience on the part of pupils may be assumed. What is here insisted upon is the necessity of an actual empirical situation as the initiating phase of thought. The fallacy consists in supposing that we can begin with ready-made subject matter of arithmetic, or geography, or whatever, irrespective of some direct personal experience of a situation . . . the first stage of contact with any new material, at whatever age of maturity, must inevitably be of the trial and error sort. An individual must actually try, in play or work, to do something with material in carrying out his own impulsive activity, and then note the interaction of his energy and that of the material employed. (1916/1966, p. 153)

As you interact with materials in your own way and raise your own questions, you may find that your questions do not have easy answers. They may touch "elementary" problems: "You are looking at the elements and the elements are deep . . . The elements are not simple. They are not the things you learn first. If they were, you could start out with Euclid's axioms and all the rest would be easy" (Hawkins, 1975, p. 12).

The kind of elementary problems that teachers struggle with at Mountain View Center was discussed by Hawkins when he addressed a group of scientists at the Massachusetts Institute of Technology. He criticized the way science is popularized for the lay person and suggested instead a "radical reconstruction of the organization of scientific knowledge, a reconstruction designed to make science maximally penetrable from outside, to make it more readily accessible either by minds whose powers are first developing or by minds which have developed in patterns other than those now deemed apt for science" (1976, p. 16). There are, he said, "almost irretrievably elementary stumbling blocks" that often prevent the scientifically naive person from understanding standard scientific explanations. Here is an example from my own experience.

A group of teachers, out with Hawkins, had noticed sunspots when the sun filtered through the leaves of a tree. The spots on the ground were all round. Later Hawkins tried to explain this sun image to me

with the help of a diagram. I wrote in my notes:

> While David is talking, I sort of get it, but then it's gone again. I realize why his explanation doesn't really help: what David takes for granted as foundation knowledge hasn't even entered my thinking about the sun. On his diagram, the sun is connected with the objects to which it gives light by lines which stand for "rays" or "light-waves." On paper I can accept that. But when I look at the real sun up there in the blue sky, it would never occur to me to think of rays that go from the sun to objects on earth. There is absolutely no connection in my mind between the diagram and what I perceive in the real world.

How does Mountain View Center try to help teachers overcome these elementary stumbling blocks? One way is through staff who are interested in the problems of beginners of all ages, who use the Center's materials and their own expertise to help those who want to learn. Just as Bank Street School was for children, so Mountain View Center is for adults. There are no stupid questions. The burden is on the expert to try to figure out why an individual does not understand something, just as in schools the burden should be on the teacher when a child has trouble with learning. In the way that Mountain View Center provides for science, organizes and presents materials, and supports adult learning, teachers can begin to see how this approach might also work for children.

As early as 1902, Dewey criticized schools for "fractionizing" the child's world and imposing an organization on subject matter that is contrary to the child's way of thinking and learning:

> Classification is not a matter of child experience; things do not come to the individual pigeonholed . . . The adult mind is so familiar with the notion of logically ordered facts that it does not recognize—it cannot realize—the amount of separating and reformulating which the facts of direct experience have to undergo before they can appear as a "study" or branch of learning . . . The studies as classified are the product of the science of the ages, not of the experience of the child. (1902/1971, pp. 6-8)

What happens when a child is presented with subject matter already put into logical order by the adult? Hawkins (1974) compared the structure of the traditional text or curriculum guide to a ladder: You can only go one way, in one direction. Such programmed learning "reduces human differences, qualitative and many-dimensional, to differences in the rate of climbing ladders" (p. 184). Much of what goes under the name of individualized instruction today is individualized only in the rate at which it allows each child to progress. The content

and order of the studies are fixed. A more open structure is like a tree, in which learners have many paths and choices available to them as they gradually make their way to the top. They can enter at different points, go up, out, or back to the center again, linger with pleasure on a shady branch (even build a small tree house for rest and reflection), or respond to the challenge of lofty upper branches. "The most powerful learning mechanisms available to us are built in, biologically rooted mechanisms of search and exploration . . ." (Hawkins, 1974, p. 185). As long as schools limit children to study within the narrow paths of prescribed curriculums, much if not most of this drive to learn—so evident in the very young—will go to waste.

When you learn by climbing ladders, your learnings tend to remain isolated. There are no connections from one ladder to another. In a course on cooking that I was teaching with a scientist colleague, we got onto methods of food preservation. I could recite them well: drying, smoking, salting, pickling, canning, freezing, and so on. But I had never realized all these methods have one common aim—to prevent bacteria or molds from growing on the food. I wrote in my notes:

> I suddenly realized that I had never made that connection. Food preservation is one topic to be studied. Why do you preserve food? So it won't spoil. What does spoiling mean? It means food goes bad, smelly, soggy, moldy, sometimes hard and sometimes soft. Then there are bacteria. What are they? I don't really know what they are, but I do know where they are: in a different compartment in my head from food preservation. The two have never met . . .

Nor had I ever wondered what these different methods had in common. Drying, smoking, and salting all take the water from the food. Without water, bacteria and molds cannot live. In a tree these facts get connected; on ladders they remain separate.

How was it that I had never thought that cultivated plants had any relation to wild plants? How was it that I had never wondered where guinea pigs came from originally? I had seen them in classrooms and pet stores and knew they were used in labs, but not until a youngster in school asked me why guinea pigs are born with fur whereas rats are born without it did I find out that they had a natural habitat. We are not taught to think this way in school, and we do not keep our early curiosity about the world.

Most schools believe that a course of study arranged in an orderly fashion makes it easier to teach children and helps to transmit knowledge. But learning, as we should know if we heed our own experiences, is seldom orderly, at least not in its initial stages. "The tight

formulation and logical sequencing must be learned, but they cannot be learned first . . . What comes first is absorption in subject matter. No one learns by being led blind along a path he cannot begin very soon to see for himself" (Hawkins, 1974, p. 15).

What changes are necessary if even the best curriculum worked out by adults for children does not catch the interest of many of the children? As I stated earlier, I believe the teacher must become a diagnostician who observes the child, listens to the child, takes cues from the child, and then plans for the child's progress. That is how curriculum should be developed. Many resources must be available to teachers to help them grow into this role of diagnostician. One of these resources should be inservice education.

Inservice Education and Mountain View Center

Mountain View Center provides different kinds of inservice education to teachers. Those who take advantage of what we have to offer do so voluntarily. They can register for one of our workshop courses (we run two sets each year and an intensive two-week summer course); they can come and consult with any one of the staff about some specific question or problem; or they can ask a member of the staff to observe or work in their classroom. Not all staff members have had classroom experience. We are a mix of people with expertise in one or two subject areas—specialists—and people who have been classroom teachers—generalists. The specialists teach courses and go into classrooms but mostly to offer technical assistance—for example, how to wire a model city, how to start a weaving project, or how to set up a darkroom. The generalists also teach courses in subject-matter areas, but they spend more time in classrooms and help teachers with all school matters—organization, planning, special children, and so on. Generalists may use the help of specialists. I believe we are most helpful when we work together as a team.

One of the basic beliefs at Mountain View Center is that teachers must have extensive opportunity to learn about subject matter at their own adult level. Workshops, therefore, are not always geared to what is immediately useful in the classroom. To grow as professionals, teachers need a chance to explore and learn about things that interest and absorb them. Because you do your best teaching when you are "turned on" about what you teach, the wider the range of subjects that interest you, the greater the choice that you can offer to students.

"It's really important for me to be excited about what I'm doing," a teacher told me recently. She had taken her first graders to a farm, but because she was not very interested in the subject, nothing much happened in the classroom after the trip. Later when she took the children to a brick factory, she herself was very interested, and the subsequent classroom activities were varied and rich, and lasted for many weeks.

To help others learn, you have to be in touch with your own learning. My struggles with science at Mountain View Center were invaluable, not only because I became more knowledgeable about science but also because I became aware of my own learning style. That awareness helped me understand better how others might learn. I found out what interfered with my learning and what helped me to learn, how little tolerance I had for disorder and confusion, how competitive I could be, and how I sometimes needed to retreat because I was afraid someone might tell me what I wanted to find out by myself. When I was close to understanding something but couldn't quite "get it," I would become incredibly frustrated. At one time a new discovery so unsettled me that I had to dismiss it from my mind. Teachers at Mountain View Center find out similar things about their own learning. We hope this insight makes them more sensitive and responsive to different learning patterns of children in school.

When teachers get confused at Mountain View Center, they tend to become more tolerant of children's confusion. In the cooking course mentioned earlier, we all got confused one day. We were going to investigate milk and milk products. I had purchased regular and skimmed milk, half-and-half, and heavy cream. After talking about the weight of water, Robert[1] asked the group, "How much does a gallon of milk weigh?" Teachers weighed the milk and were surprised to find that it weighed less than water. The findings didn't fit into my logic, a logic shared by many of the teachers.

> We think of water as something neutral, not quite "nothing" like air, but with a little bit of that "nothing quality." Water is water, milk *is* something. It consists of the neutral liquid of water plus something else, color and texture. If anyone asked about comparable weight, you would say milk is heavier than water because if you take something neutral and add *to* it, there will be *more*. Cream has *more* butterfat (more color, more texture) and therefore should be even heavier. Skim milk, with the least butterfat, should be the lightest. That the thick cream weighs less than the thin milk is most confusing.

[1] To protect the privacy of my colleagues, I have used fictitious names in anecdotes.

Experiences like these help to remind teachers how difficult new learning can be, and they become more sensitive to and accepting of children's confusion.

When teachers first come to Mountain View Center to take courses, they may become overwhelmed. We introduce them to a new way of thinking, a new way of asking questions and seeing relationships, a new way of looking at the world. Last summer a teacher described his efforts to understand air pressure, then added, "I don't fully understand it but at least I think I know what it is about, this process that I don't fully understand." Struggling with new, difficult concepts is an important stage in learning. Over the years my attitude has changed from a frustrated "Why can't I understand this?" to a much more relaxed "Ah, that's what this is all about, I see. Now I know where to go and what to do when I want to understand this more." I try to help teachers make this shift when they become frustrated. When they say, "I don't know anything. How can I teach this way when I am so ignorant? There is just too much to learn," I tell them to look at it differently: "How exciting that there is still so much to learn. I shall never run out of ideas for teaching and I can be learning for the rest of my life." You have to look at it this way or you might indeed give up.

Helping Teachers Teach

Teaching by setting up a classroom that invites children to learn, teaching by developing a curriculum from the children's immediate environment, is an art that takes insight, knowledge, and many years of experience to perfect. Very few teachers are trained to teach this way. Even if they were, they would need help and support, especially during their first years of teaching. The short apprenticeship of student teaching, even at its best, does not prepare teachers for all they have to do when they are suddenly alone in charge of a group of children. Teaching is the only profession in which beginners are on their own as soon as their formal training is completed; they are expected to perform like a veteran with 20 years of experience. Sometimes older teachers help beginners and sometimes principals give support, but there is no built-in mechanism for the continuing education of young teachers. Many times, beginning teachers suffer from feelings of failure, frustration, and great isolation.

There is a great deal of waste in the teaching profession. The system does not make use of the skills that master teachers have acquired,

and many creative teachers leave the classroom to move into jobs where their expertise is of no use.

Inservice education as it exists today does not generally meet the needs of most teachers. If we want to improve the quality of inservice education, we must learn to differentiate among the needs of teachers. They are not a homogeneous group; their needs for additional training and support differ greatly. Although talking about stages of development tends to set up artificial categories, it can be useful in giving a general picture of movement and growth. I have worked with teachers in Boulder for nearly six years, and I have observed roughly three overlapping stages. (I am talking only about the teachers who have come to Mountain View Center voluntarily and who have asked staff for help in their classrooms, presumably because they were in agreement with our basic philosophy.) Each stage requires a different kind of help.

Beginnings

The "beginning" teacher here may be a first- or second-year teacher, or an experienced teacher who wants to try a new approach. Teachers' main concerns at this stage are classroom management and organization. Organization and provisioning of an open classroom take an enormous amount of initial work. Teachers often have to replace desks with tables, cabinets, and open shelves (some of which they must build themselves). They must create more space for work and storage and rearrange their rooms to have separate areas for different activities. They must have quantities of nonstandard materials for children's varying interests.

Teachers need practical help at this stage. If the room has to be changed, they need someone to help them change it. If they want to try new materials, they need someone to show them how to set things up. If they want help with record-keeping, they should be able to see the systems other teachers have worked out. Advisors must be available when teachers need them (timing can be crucial), and they must be willing to "pitch in," to get materials, to set up for activities, to do everything possible to help make the classroom function so that teachers can get some sense of success and have the satisfaction of seeing that there is a payoff for all the additional work.

I recently asked a teacher, an experienced "beginner," what had been most helpful in my working with her. She replied:

> The thing that I found most helpful was that you'd make a suggestion, like we could visit the concrete plant, and then you'd say, "I'll

> go with you to check it out." So often teachers need a hand. Or you'd say, "I'll call this guy," and then I could follow up on it. It was this kind of thing, this little extra sort of aid that is so hard for teachers to get . . . The most important thing was the initiative you took.

When beginning teachers ask for help with subject matter, advisors must be very sensitive. Too many new ideas, however well intended, can be overwhelming. I remember an episode from my own teaching: I felt depressed about the way things were going in my class, and I asked for help. A science specialist gave me many good suggestions, but after she left I felt like crying. I could not perceive her suggestions as help. I saw them just as more things I had to do on my own—more stuff to get, organize, and manage, more to learn about, more to cope with—when I was already feeling overwhelmed.

Subject-matter learning, however, whether it is working with materials or investigating the environment, should be part of beginning teachers' inservice work so that they get involved with the materials which children are working with and begin to use the environment for explorations.

Help with organizational problems could be given by many experienced teachers if they were freed to do this kind of advisory work. Teachers also need to be able to visit each other's classrooms and have officially sanctioned time to talk with other teachers. "Talking and thinking things out together are not valued," a teacher told me recently. "Sharing your ideas is not considered a legitimate activity for an inservice day." Some school systems are moving in this direction—giving teachers one day a month and trusting them to spend it as they wish—but we are still a long way from having such ideas generally accepted.

New Ideas, Materials, and Activities

At this stage "how" questions are asked less often about classroom organization and overall approach to teaching and more often about some of the materials and activities to which teachers have been introduced at Mountain View Center workshops. Children may be seen working with balancing apparatus, batteries and bulbs, stream-tables, or simple photographic equipment, and they may take trips into the school neighborhood. There is a fair degree of informality in the classrooms, and both teachers and children enjoy their work. But teachers still want practical help. A teacher said to me:

> A lot of consultants tell you what you could do but they don't help you do it. They assume that because you've been a teacher, you know

> how to do these things. But that's not true at all; you don't know how to do it; you aren't sure how to approach it.

Teachers also frequently ask for help in integrating these concrete materials with the more traditional "skill" subjects so that work with materials will not remain isolated from work with language and mathematics.

Because "second-stage" teachers are not struggling for survival—some of them have been successful traditional teachers for many years—advisors must be able to work within the existing structure of their classrooms and adapt to their personal style. Often the advisor may make one or two visits to a classroom to see how it is arranged, get a feel for the normal flow of the day, and observe how teacher and children interact. I keep such initial visits very low-keyed because teachers often feel anxious when an advisor first comes to visit. I always get involved with children when I go to a classroom—whether I have planned to do so or not. It is probably helpful for teachers to see that you know your trade [cf. Katz's observations about "the need to establish credibility of expertise fairly early in the advisor-teacher relationship" (1974, p. 155)].

Sometimes teachers are intimidated by Mountain View Center's rich environment, and they hesitate to ask for help. I once offered to visit a teacher who had come to browse at the Center. "Oh, I wouldn't want you to come into my room," she said. "I'd be embarrassed. I'm always terribly embarrassed when people come out from the East [where she had gone to school] and want to visit me." It is important to be aware of such feelings and to reach out and reassure these teachers that you are not coming to judge or evaluate them.

"Extending"—Developing Your Own Curriculum

Teachers at this stage are generally comfortable in their role. They have good classroom organization and plentiful materials, and children are interested and involved. The teachers are becoming aware, however, that they could be doing more to extend children's learning. They are looking for greater depth and diversity and more continuity in children's work.

Before teachers can extend children's learning, they must have experienced this process in their own work. Mountain View Center workshops try to give teachers the opportunity. Below is an excerpt from the journal of a teacher who attended one of our summer courses. The general topic of her study was weather.

> We began this morning with various-sized flasks filled with water. Tons of questions came up: Which magnifies the greatest? Which

> will heat the fastest and why? Which will light a match the fastest? Which will burn paper? What would be the effect of putting India Ink in the water? There are endless possibilities which these questions could lead to. Each person picked up on something different. I was interested to see which flask would heat the fastest. From this question I became interested in how much the temperature varies from the sunlight to the shade and if different surfaces are a major factor. I placed eight thermometers (80°) on various surfaces in the sunlight and shade. The temperature was consistent in the shade but there were a great variety of readings in the sun. I began to wonder how the color of a surface affects the temperature and decided to test this with colored paper. I really became aware of the importance of working through an experience. The process is "where it's at."

Teachers who want help with extending seem to know that something is missing from their program, but they are not always sure what it is. I myself realized only recently that what I had called extending is in fact curriculum-building. Preservice education generally does not prepare teachers for this task. "I've never developed my own curriculum," a competent third-grade teacher said to me as we were planning social studies activities for her group. And a sixth-grade teacher, wanting to develop a social studies curriculum that would be meaningful to the children in her mountain community, said, "I don't want to just go through the textbook." Neither of them quite knew where or how to begin.

When teachers have experienced learning in some depth at their own level, when they have solid knowledge of both child development and subject matter and can use it as the basis for their planning, they are ready to extend children's learning and build their own curriculum. Here again they need help in the classroom. One of the teacher-advisors mentioned earlier said to me:

> If you're trying something new you have never done before, you need help. I need substantial help. I need to talk about ideas and possibilities. I need somebody there working with me, to see what's useful, what's not useful, to see if my feelings are accurate. I need someone who is at least where I am.

Working with teachers at this stage of development is challenging, exciting, and very satisfying. We work as colleagues, learning from each other and, as always, from the children.

Inservice education must provide for the continuing growth of teachers at all levels of experience and maturity. If the most experienced teachers are shortchanged, as they so often are because their problems seem less urgent, school systems will continue to lose potential educational leaders.

Social Studies Explorations: Some Examples

When I first went to Boulder, I spent much time helping teachers with organizational matters, and I also encouraged them to take trips with the children into the immediate school environment. I taught a workshop entitled "Exploring the Urban Environment" that I hoped would help me get to know my new community and help teachers get acquainted with their city's resources. One of the places we visited was Boulder's Sewage Treatment Plant. On our return to the Center I described to a visiting biologist how the partially treated sewage was slowly sprinkled over a large round bed of algae-covered rocks. "The algae eat the bacteria and then the effluent is returned to the stream," I said, quoting our guide at the plant. "Algae don't eat bacteria," the biologist said with authority. Noting our confusion, he offered to work with us, and two very informative lab sessions on bacteria were inserted into my course. (When you are not restrained by time limits or by a syllabus that must be covered, you can afford to explore related subjects to broaden your understanding.)

For the first time I saw how social studies explorations can lead into science. Since then I have found that teachers' and children's questions, both in the classroom and on field trips, often touch on some aspects of science, and I have become aware of how my own scientific ignorance limits the help I can give in this area. Social studies can be greatly enriched if the natural connections with science are picked up and extended. Adding science "increases the surface area" of social studies, as Hawkins might say. That is, more children can find starting points of interest to them if the topics for investigation are not restricted by artificial subject-matter divisions. By having access to the expertise of scientists, I can help teachers incorporate science into daily classroom work. Both children and teachers can benefit. Teachers should always be able to draw on different resource people, and learning from such people, whether they are scientists, artisans, local historians, or just generally knowledgeable residents of the community, should be viewed as acceptable inservice work.

Teaching has been described as a repeated cycle of "diagnosing, designing, responding, and then rediagnosing from failure or from a child's confirmation of success" (Hawkins, 1973, p. 14). What does it mean in practical terms to diagnose, design, and respond? I will try to illustrate this process with an example from my work.

Joyce, a second-grade teacher, had asked me for help with her social studies program. We planned some explorations within the school

building that were to lead to beginning mapping. The children did some nice block-building, but Joyce complained that they were driving the toy trucks down the school corridor. That day when I had driven to the school, I had noticed some machinery on a dirt road alongside the playground. Taking Joyce's cue about the children's interest, I suggested that the roadwork might be a suitable topic for study. Joyce was interested, so during her lunch break we went out to talk to some of the workers. We learned that the road was going to be graded and paved with asphalt and that a concrete storm sewer would be constructed at the intersection near the school. We found out who was in charge of the work and asked about the names of some of the machines. Later in the afternoon we took a group of children to watch dump trucks and graders at work. That was the beginning of a study that continued for about two months. Because there were long pauses between the different phases of the work, Joyce asked colleagues whose classrooms faced the road to alert her when something of interest was happening. Whenever a messenger arrived in her room with news of impending action, Joyce dropped what she was doing in the classroom and took the children out to the road.

When we first watched the dump trucks, some children wondered where the "dirt" came from. We asked the driver and learned that he picked up his loads at a nearby gravel mine. I arranged a visit to this gravel mine with Joyce after school. We were given a tour of the plant and found the operation fascinating. We planned a trip with the children, which was a great success.

After the road was graded, a water truck wet the loose dirt and a roller packed it down. The workers explained to the children why this had to be done before the asphalt could be poured. New questions were asked now: What is asphalt? Where does it come from? How is it made? Joyce and I made an appointment for another after-school visit, this time to the asphalt plant, and again we arranged a trip for the children so they could see how and where asphalt was made. Because of changes in the construction schedule, we went to the plant before "our" road was paved. When the trucks with the hot asphalt finally arrived, excitement was high. Teachers and children spent almost the whole morning outside, watching the work.

During all this time many of the classroom activities revolved around the roadwork. There was much writing, drawing, painting, and block-building, work with science and math, and many good discussions about machinery, raw materials, and work processes. Chil-

dren sifted and sorted aggregate from the gravel mine, made a large mural of the various stages of the roadwork, constructed a simple conveyor belt in the block corner, and so on. They were involved and were learning on many different levels.

Joyce's own learning was also impressive. Much of her previous teaching had been in brief units. At the end of this experience we planned to shift our focus to a nearby construction project and use it as a new, although related, starting point. As we talked, Joyce suddenly exclaimed, "We've got the whole year laid out!" And then she added, "The fun part of working this way is that teachers can have fun too."

How did we develop this curriculum? We placed the children in "strategic positions for making explorations." We listened to their questions and planned opportunities that would help them find answers. We "diagnosed, designed, and responded." Working in this way, you never plan for a definite outcome. You have a starting point —in this case the roadwork near school—and some general goals—for example, to show where raw materials come from and how machines can change them, to observe how much planning and work go into the paving of one block of road—but you never know exactly what will interest individual children. Therefore, you cannot decide in advance what they will learn.

When an activity has worked well with a group of children, there is the temptation to write it up for others, to package it for wider consumption. A nice primary text could be made from our experience, with photographs of all the work we observed, but if another group of second graders were given this book for study, they could never get as involved or interested as the group which we worked with. Children at this age must have concrete experiences that relate to their own lives. Describing what worked with one group of children as an example of useful classroom work can be helpful to others as long as it is not intended as a model to be copied. Curriculum developers should produce more resource books for teachers with background information on many different subjects. It would have been very helpful, for example, if Joyce and I had had a book with names and pictures of the different machines we saw on the road, information on different road surfaces and the manufacture of asphalt and concrete cement, an account of the history and economics of road construction, and statistics on roads in the U.S.

Texts can never take the place of first-hand experiences. A curriculum developed by adults for children cannot respond to children's questions. Only when children are seeking the answers to their own

questions will they begin to learn. The questions you ask depend on your prior experiences. I have taken three trips with different groups of teachers to the Boulder Water Treatment Plant. Each time I have had different questions. The first time my main interest was general: Where does the water come from? How is it treated? How is it distributed to the homes of the city? My second visit took place after a trip to the sewage plant, and this time I became interested in the fact that drinking water becomes sewage, is treated at the sewage plant, from which it is returned to Boulder Creek to become the drinking water of the next town, where it is treated again, and so on, all the way down to New Orleans. How often can water be treated and still remain water? I wondered. Two years later on my third visit I had a completely different question: How is water pressure reduced? I knew that transformers reduce electric voltage, but what happens with water? It builds up tremendous pressure as it descends 7,000 feet from the glacial lakes to Boulder. This pressure has to be reduced before the water can be piped into homes.

Charlene, an experienced first-grade teacher who has taken many courses at Mountain View Center, understands this process well. "You never plan for questions," she said to me recently as we were discussing curriculum planning. "When the children ask questions, that's when you go to work. The more experience you provide, the more questions are going to come up."

A year ago Charlene felt that the children's activities were not sufficiently connected with their lives outside school. We worked together for over a year on a social studies curriculum that would provide a framework for learning in all subject areas and be meaningful to the children. Our collaboration was a rich experience that I can summarize only briefly here.

First we wanted the children to get to know each other, learn to care for each other, and accept and value individual differences. We knew that such things can never be taught and that a classroom with interesting materials and varied activities is a necessary prerequisite for a good life in school. But we wanted to have some activities that would involve all the children and bring them closer together. Because Charlene liked group discussions and wanted to become more comfortable leading them, we decided to start there.

Early in the school year we had many discussions on subjects related to the children's lives—their homes and rooms, their families, their parents' work, pets and toys and TV programs, favorite foods, trips to visit relatives, and so on. During this time I suddenly realized

that I was telling Charlene to listen to the children and take her cues from what they were saying but I was not helping her learn how. We began to tape-record the discussions so we could analyze them afterward. As we listened to the tapes, we noted what questions children asked, what comments they made, and how and when we responded. Charlene learned to really listen and tune in to the children's thinking. At the end of the school year she described her learning:

> We started talking about the kids and where they are and what they bring to school. Before, I really assumed a lot. Then we talked about how far back you have to go and how you can't assume so much and I began to think about that when I was planning. Now I don't assume anything and I'm giving the kids a chance to talk. Sometimes it seems as if they do understand but as they talk more and more, they have so many questions. Also before, I wanted end-products. I was concerned with the process and going through the whole thing but I wanted something nice at the end. Last year, the end-product didn't matter any more. I got involved in what was going on while working with the kids and I let them do the whole thing, even if the end-product didn't turn out to be something "nice" that I could put up.

Later in the year we planned walking trips for small groups of children to visit their homes. We noted how we got there, compared building styles and materials, and did some very elementary mapwork in the block area. Charlene also asked parents to come to her class. Some brought younger siblings along, some came to talk about their work, and some just visited and joined in the activities with the children. Then we planned a series of trips into the community to visit parents at work—in a local brick factory, a beauty shop, a hospital, a pumpkin farm, a tea company, and the fire station. The trips were particularly exciting for the children who saw their parents, but the places of work were also interesting places to visit in themselves and provided meaningful connections between the classroom and the outside world. Throughout the year the content of much of the children's work in language, art, and science related to these trips, and work in the classroom often led to further explorations in the environment.

When we went to the brick factory last year—a particularly exciting trip because the children could observe the whole process of brick manufacture—Charlene thought that follow-up activities would take about a week or two. However, as we started talking about all the different aspects of brick-making—how the raw material is changed from dry clay, to wet clay, to large molded rectangular chunks of clay, to individual bricks that are air-dried and kiln-dried and then cooled —and as we recalled the sounds of the machines and the heat of the

kiln and the many different jobs of the people we saw, we realized that there was enough content for many weeks of learning. This year Charlene decided to take her class to the brick factory early in the year so that she would have ample time to pick up on children's questions in the classroom, plan related trips, and, if necessary, return to the brick factory with groups of children who wanted to go again to concentrate on special aspects of the work.

Last year Charlene clarified her thinking about general goals for her first-grade class and also began to plan for individual children's needs. This year her curriculum will give children a better understanding of how humans use their environment and how they change the earth for their needs.

Concluding Comments

"How is curriculum development related to the professionalization of the teacher's role?" is the question I was asked to discuss. I believe that we need to change our perception of the teacher's role before there can be any significant change. As long as teachers are regarded as implementers of a curriculum designed by others rather than as initiators and developers of their own curriculum, as long as they remain at the bottom of the educational hierarchy and do not have a voice in larger decision-making, as long as they are not trusted to plan for the particular children in their classes, the teacher's role will not be professionalized.

Teaching, as I have described it, demands intelligent, creative, and sensitive individuals who will approach their task with energy and compassion and who will be committed to their own continued learning and growth. Not many such individuals choose to stay in the classroom. Only when teachers are given full responsibility for their job and learn to *take* this responsibility will teaching become a respected profession.

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[2] *Outlook* is the magazine of the Mountain View Center for Environmental Education.

3

Partnership for Curriculum Development: A Personal View[3]

Anthony J. Light

In England the school system is organized by local authorities, which are somewhat equivalent to American school boards. The curriculum that each school follows is very much the responsibility of the teaching staff and particularly the head or principal of the school. Obviously the teachers have to have some education in content; they get it from their teacher training. Teachers at the secondary level have also done some intensive study in a particular discipline.

What happens in the classroom as far as the instructional mode and the content are concerned is very much up to the teacher. This feature of our system has tremendous advantages. The biggest one is that the teachers are thoroughly professional in their choice of activities for their students. Also, they have a choice of materials, which they either get from published sources or duplicate on their own. They are expected, of course, to cooperate within the school to produce a total curriculum, which comes under the management of the school principal. The school principal is not just an administrator; he or she is very much a leader of educational ideas who works with the staff to produce a balanced program for all the students in the school.

There are, of course, outside influences on school program. Qualifications for entry into higher education, industry, and occupations very much depend on a system of public examinations. Teachers in the secondary schools are responsible for preparing their students for these examinations during the last two years of compulsory school-

[3] This chapter was adapted from a presentation to the Curriculum Development Consortium, Hazel Park, Michigan, sponsored by Detroit Public Schools, Region 6, Centerline Public Schools, and Wayne State University, College of Education, June 1975.

ing, that is, when the students are 14 and 15. At 16, when compulsory schooling ends, some students stay on in school to take advanced courses for university entrance (sixth form), or they may go on to further education in community or technical colleges. Even at these levels, where there are also public examinations, the content and the methods of instruction are still very much in the hands of the teacher.

There is a big advantage in having responsibility, then, but critics contend that there are a couple of disadvantages. The first is that each school develops its own unique curriculum. The resulting diversity can lead to difficulties if the population is mobile, for children moving about with their mothers and fathers have to pick up new programs that are not standardized. It can also lead to a great variety in the quality of what happens. It was these disadvantages that eventually led to the setting up of a central body—the Schools Council—to try to produce, not a prescribed curriculum for all the schools, but ideas that would permeate the school system in England and Wales and generate a solid base of theory in the disciplines and in pedagogy that would enable teachers to raise the level of their teaching.

When the Schools Council was formed in 1964, I was the head of the geography and geology department in a secondary school. I had taught mathematics, religious education, ethics, and philosophy as well, and I also had introduced vocational courses in land surveying. An event happened that year that is still influencing me quite a bit. In England and Wales we have a team of national inspectors who report to the central Ministry of Education and are responsible for the overall quality of education. They work by region and subject. In 1964 the regional inspector for geography came to see me. I was scared stiff because in those days inspectors and advisors could affect your career prospects. Fortunately on this occasion the inspector came and said, "Look, we're holding a teachers conference in about three weeks, and we'd like you to contribute to it by explaining how you organize your geography program."

I went to the conference and it was the first time in 11 years of teaching that I had an opportunity to talk to geography teachers from other schools. I had been all on my own, I had had to make my way as best I could, and although I had picked up ideas from books and my own observations, I had felt very isolated. Discussing my program with other people was a tremendous experience.

A man from a local college of education was present at the meeting, and he and I struck up a friendship. He persuaded me that my best future lay not in the school system, but in the college. I moved to the

college, where I had to change the whole of my thinking. I had to train teachers partly on the basis of my own experience but partly by going to new situations in elementary and secondary schools. I had not realized how quickly my friends in the teaching profession would regard me as somebody who knew nothing about a job. In the very early days they would say, "Oh ho, we see you have left teaching and taken an easy life out in a college of education." That attitude is present among teachers even now. But we tried in a number of ways to break it down. What we wanted to realize in this college of education, which we were setting up for the first time, was a living relationship with the schools; we wanted to do our work in the schools, bring children into the college, and interact as much as we possibly could. We chose a number of different ways of interacting. We used to go in regularly with teams of education students. We used to establish a working relationship with the school principals so that we could agree on the kind of criteria by which we would judge the education students. The teachers used to come to the college and help the students with the arrangement of content and other instructional tasks.

I found this work most exciting. It was easy for me, perhaps because I was teaching a subject that allows everybody, of whatever age or standard, to use basically the same methods of inquiry—that is, observing directly in the field, bringing together information, and comparing one area to another. So just as a five- or six-year-old child in an elementary school could do a survey of his or her own shopping center, so at the research level, in which I had worked previously, I was able to do the sort of work that Brian Berry has done at the University of Chicago in terms of hierarchies of retail centers. I found in my contacts with colleagues in the college that this kind of approach was possible in many subjects if we only got ourselves in the right frame of mind. So my own views about education were considerably influenced by being able to work with teachers and share with children ways of inquiry and discovery that I had never thought possible when I was teaching in a formal way.

I stayed in that job for a few years, and then I felt that I was beginning to get a little bit too precious. That, in our terms, means a little bit too high-minded and a little bit too remote from the realities of the classroom. I also felt that I wanted to make a more direct contribution to the school system. Therefore, I moved into administration, in Bristol. I thought I was going to be able to get more directly into the schools, but the fellows who were teaching thought I was even worse than a college of education lecturer because I was one of

"the establishment." But I still felt that it was important to work in the way in which I had been encouraged by my experience in the college and the school system. So I began to look at ways to bring the heads of the geography and history departments together to share views, look at programs, try to update programs, and, particularly, generate materials about the local area. I did not need to set up a special arrangement to get these people together because in England we have subject teaching associations—in this case, the Geographical Association. This particular association brought together professors of geography from the university, teachers of geography from the elementary schools and the secondary schools, teachers of geography in the colleges of education, and me, an administrator, trying to do his best to help the system work.

We did some great things together. We asked teachers to produce a geography and a history of their own school district. We then went a stage further and arrived at quite an exciting project whereby the field work in local history and geography in one school district was exchanged with the field work in another district. A downtown school would send its students up to a suburban school or a country school, and the teacher would take them around the "trails."[4] The way in which we were able to exchange ideas and come to some common views about what should be taught in geography was incredible.

At this same time I heard about the Nuffield Foundation's math and science program, which was established on a national basis. I thought to myself, "These national projects don't seem to have much relevance for us." But the local authority decided that it was going to cooperate with this national project. We were very worried because people from the national project had said to us, "You can only come into this program if you'll set aside a building where the teachers can come for training, for sharing experience, and for developing their own curriculum materials; we'd like for you to call this building a Teachers' Centre." We had never heard of a Teachers' Centre before. Although we were used to working together, in the way I've described, we were not sure what would happen when we started on this Teachers' Centre.

We opened in an old house in a downtown district. There were two big rooms. One contained benches for craft work, a photocopying

[4] "Trails" are local walks planned by teachers for their students. Inquiry guidebooks are prepared to highlight the significant observations that students can make. Open questions are designed to foster thinking about the observations, and means for recording the observations are suggested.

machine, a small lathe, some project equipment, and so on. In the other there were tables and some equipment that we had scrounged.

When the project team came down to address us, we expected them to tell us precisely how to teach science and math in elementary programs. The leader of the project at that time was Dr. Jeffery Matthews, a mathematician. He sat there in front of us and said, "We want to find out what you know and what you can contribute to this project. Let me start by giving you a few ideas. We've put out some equipment on these tables—on one some structured number apparatus, on another some different shapes, on another some glasses and jugs, and so on. What I want you to do is get yourselves in groups and think about the potential in this material."

We were really quite astounded: Math isn't about jugs and glasses; it's about tables and computation and how to go through the processes of addition, subtraction, multiplication, and division. We all rolled up our sleeves, but I think we were annoyed above anything else.

From that first meeting grew the tremendous idea of cooperation between principals and school systems, local authorities and school advisors, and college of education tutors, not coming with a fixed viewpoint about what should be taught, but working out together what we could do with equipment. The project leader said to us, "We will come around again and see what progress you've made, and if you've got good ideas, bring them to us. We will eventually collect all of them in a guide for teachers, who will then take your work and adapt it." I have never been more impressed than I was by the progress that we made. We all felt that we had something to offer, and we learned so much from each other. Somebody who had been a principal for 20 years found that he was learning from an assistant teacher who had been out of college only two years. A hardheaded old nut of an advisor who thought that he had learned it all in the college of education and in the schools began to think afresh about how to tackle curriculum problems.

This particular way of working brought me into touch with the national body called the Schools Council, and I discovered, quite incidentally at first, that the Schools Council was running curriculum projects of this kind in geography, history, math, science, English, humanities, and so on. As I gradually came to appreciate the work that these projects were doing, I began to think that the idea of the Schools Council was tremendous, and having got in touch with the people who were working with the Schools Council, I eventually joined them.

What is the Schools Council? It started, as I said, in about 1964, at a time when the teacher's sense of isolation was most acute and when there was the feeling, shared in the United States in the early 1960s, that something positive and systematic ought to be done to try to make the curriculum more appropriate to modern society and technology. At first the central Ministry had a small group that met behind closed doors to consider how to improve the curriculum. The teaching profession was immediately suspicious that it was going to lose the freedom and responsibility that it had treasured over the years. Therefore, the teachers unions and the local authorities went to the Ministry and said, "Look, in the question of the curriculum, responsibility should be shared among the teachers who have to do the job, the local authorities who have to provide the resources, and the central government that is responsible to the country for the educational program."

So the Schools Council was set up with these three constituent members, plus a fourth, the university and the training agencies. Every time the Schools Council has a meeting to make decisions about policy in its senior committees or to consider the curriculum in a particular subject field or age range, sitting around the table will be teachers, administrators university professors and faculty members, people from industry, people from parent and community associations, and people from the local school boards. That kind of ideal, of partnership, we have always stuck by and still persist with. Everybody shares a common commitment to improve education. Because we are not working for the government, because we are not there to argue about conditions of service or salary or tenure, as the teachers have to do with their local school boards, and because we are not just concerned with administration, we are able to make an effective contribution to the development of the curriculum.

How do we do it? I have already mentioned the project which I first came in touch with. Most of our projects work the way that one did. A small full-time team is set up. It is usually based in the university, but not always. It has the responsibility to interact with a large number of teachers, basing its work both on the teachers' practice and the theory that is available either in a discipline or in educational research. Usually the team's first responsibility is to get around to a large number of schools and ask teachers what they are trying to do, what good examples of curriculum they have, that can be used to enrich the national program. So the projects are very much a partnership between a small team and a larger group of teachers, and theory and practice are linked all the time.

Geography is a subject in which we have had some very successful projects. In the late 1960s we in England decided to raise the school-leaving age from 15 to 16. Of course, many students stay beyond the compulsory age. The students who were not staying were obviously not very interested in school or perhaps not very intelligent, and they were regarded as likely to drop out. We set up a number of projects to look at their needs. One of the projects was called "Geography for the Young School Leaver." The full-time team comprised two university people, two teachers, and a person with experience in design and publishing. Their first time around, they interacted with teachers in about 60 schools. They wanted new ideas in geography to be the framework for the project, so they included modern concepts of settlement patterns, transportation networks, etc.—concepts that were being dealt with at the research frontier of the subject. They wanted to put these ideas into a form that would be acceptable to young people who were going to leave school and were not interested in academic geography at all. So they asked the teachers to translate the experience, or the philosophy, into classroom procedures that would be useful. They took the geography of recreation as one theme, calling it "Man, Land and Leisure," and they asked the teachers how to get across the relevant concepts. The teachers came back with some pretty good ideas. They said, "We can take surveys of what is available for young people: Where are the parks? Where are the football grounds? Where are the ice rinks? Where are the cinemas? Where are the play spaces for very young children? Where do people go on holidays?"

Gradually these ideas came filtering back from the classroom and were incorporated into the project. The project produced materials from the teachers and the project team itself. A unit was built that encouraged teachers to use their neighborhood, to go out and think about things like recreation customs among people in England—for example, whether they go to the coast or whether they go to the mountains—and to introduce problems about the conflicting use of land—for example, whether a national park should be for the farmers or the tourists. Those were very exciting days for the schools that were involved in the project.

After the project had worked for three years with some teachers, the Schools Council was faced with having to get this way of working transmitted to as many other teachers as possible. First we identified one person in each school district in England to act as a leader for a local group of teachers. Then we clustered these leaders in regional teams and identified a regional coordinator to help them out, assist

them with resources, interpret the project's aims, and so on. Twelve regions were served in this way by twelve regional coordinators, drawn from colleges of education, who worked with local group leaders, drawn from the teaching profession or from the advisors, who in turn brought their colleagues into a working relationship so that the project's ideas would be spread out regionally and locally.

What I have tried to do is to show, very briefly, how my own thinking was conditioned by the fact that I was isolated in the early days; I did not have a chance to see colleagues. Opportunities were opened up to me and led me to express the idea of partnership between teachers, the college, and a school system, and how it can bring about curriculum change.

Now let me raise some questions that I am commonly asked by teachers.

How do teachers get time to work on curriculum development?

Curriculum development is not for every teacher. Some have a home to run and other responsibilities. On the other hand, it is possible to find time. We expect teachers to give some of their own time voluntarily, but we have been able to get the local authorities to provide some time during the regular school day. We have also been able to use conventional inservice programs to introduce curriculum development. For example, instead of having teachers attend courses and hear lectures by important people, or attend school workshops, we have used that time for curriculum development. Additionally, on closure days, when the students have a holiday but the staff do not, we have brought teachers together from different schools to work on program development.

What about financial support for curriculum development with teachers?

When there was money (there is not so much now), many local authorities would release what we call teacher consultants or advisory teachers either full-time or part-time to work with the curriculum project teams and visit classrooms. These advisory teachers are a very potent force for change because they are still teaching and are accepted by colleagues as being able to do the trick in the classroom. There are many ways of financing curriculum development but a great deal of our work is being done voluntarily.

At present, teachers in England do not get credit for curriculum development. The Schools Council is trying to obtain university validation or accreditation of curriculum experience as comparable to either the undertaking of a research program for a master's or a doctor's degree or the undertaking of a course of lectures.

Who makes the decision that a particular subject is going to be studied, and what process is used?

When the Schools Council was first set up, it determined a broad program. Then school needs were brought to its attention, among them a need expressed by teachers, universities, and local authorities for more systematic work in linguistics—a "mother-tongue" language development program. So that need was made a top priority. Another need was preparing for the raising of the school-leaving age, which required attention to social studies programs. Soon it became evident that there were needs in the major subject areas, like geography and history. To determine the needs we set up committees that interacted with the profession and the universities. Recommendations on program development were made by the committees and forwarded to the governing body of the Schools Council.

There are two other main ways in which we allocate funds. Proposals to do particular work can be put to the Schools Council. We consider them in the same way that we consider proposals from our committees. More important, we now recognize that teachers are doing a tremendously valuable job without working with a national project. So we have publicly stated that we are interested in hearing from teachers on projects that they have written and for which they require some resources or advice. For example, if a teacher had a project and had already had some input from the school board and the university and wanted to extend it to other school districts, the teacher could ask the Schools Council for a grant. Grants are not given on a political basis. The Schools Council is genuinely trying to spotlight what teachers themselves are doing and advance their ideas.

Do you pay the university people who become involved?

Members of a full-time team are paid their salary equivalent. People working in local groups are compensated in a number of ways. First, a lot of the work is done voluntarily. Second, soon every college of education and university will be expected to have an institutional commitment to inservice work, and their staffing and grants will take account of this commitment. Third, school boards have funds to pay university people very modest rates. I found it necessary to have such funds when I was at Bristol. I paid college lecturers the fee that they would get for giving a lecture or running a program. Invariably these people wanted to be involved in curriculum development anyway because it was helping their work. Where preservice students were going into schools as a group to support curriculum development, it was part of the institution's program. There is very little money, so

we do not get hung up about it. The biggest single factor is time. Even if you can only get a little bit of time—for example, by releasing teachers at 3:00 instead of 5:30—it is a start.

Must a teacher center have a geographic location where people can go?

The teacher center I was talking about was a geographic location. There are over 500 of them all over the country. Parenthetically there is now criticism that teacher centers are not sufficiently well equipped to do the job, and there is a tendency to look to colleges of education to become professional centers and take on an inservice function. For this reason I usually talk about teacher centers and professional centers interchangeably. My view is that a teacher center should not be a location alone; it should be a network of collaboration. For example, in some of our projects we are working in a college of education that has special-interest resources. The unit in the college of education is directly linked with the teacher centers, the local authority advisory service, and the schools. The point is, you have to have an imaginative concept of what a teacher center is. If it is just a place, the only people who will use it will be those who live within a mile of it. What you have to have is an interaction of collaborators, and, in fact, some of the functions of a teacher center may take place and should take place in the schools, where the action is. So I think you want a fairly flexible approach.

What is the best size of group to involve in inservice education at one time? Can the group get too big?

As soon as you have to spend more time on communication within the system than on work, the system has become too big. I am very attracted by the cell structure of Communism, if not its philosophy. A cell structure is a very potent force. An inservice group can be regarded as a cell. A cell can bring other people in, but it has to be prepared to proliferate too; new cells must take on the function of leadership. People who have learned to work together and have developed leadership skills must start sharing these skills.

You have to have an underpinning administration, particularly if you are dealing with resources in a big institution like a school system, but the machinery should be kept as simple as possible and should allow people the flexibility of working in groups that are manageable in size. Otherwise you tend to get into the old rut of "course provision"—somebody in one group making decisions on behalf of another group. There should be freedom for each group to make decisions.

Let me give you an example. When I was running an inservice program, I got very interested in direct teaching and I did some with teachers, but it failed. So I thought that I would get a group of potential leaders from the profession to do the teaching. I got some fellows and worked with them on interaction analysis and leadership skills and so on, and then I told them to get on with the job. So instead of my speaking ineffectively to a group of 50 teachers, 12 leaders worked with groups of 20 each. We continued this leadership development program by building up leadership wherever we could find it.

Formal structures can inhibit. What is important is the administrative underpinning, which does not show. The secret is to get support. I used to go into a superintendent's office and talk to him about his problems and my problems. And together we would decide what we would like to do. My point is, Why can't you get your teachers in on it? Why can't you trust them a bit more?

How have teachers who have taken this leadership role dealt with peer reactions to them?

There is a lot of cynicism. Anybody who is on a leadership course is thought to be favored. That is why it is very important to give people maximum opportunity to be involved and make it clear that you are doing it not because you are training them or grooming them for high responsibility but because there is a task to be undertaken.

Can leadership roles be changed? Can they shift from one person to another within a group?

Leadership exists all around us. It is a quality that a group can share, and it comes because you want to maximize the contribution of everybody in the group. If you have a project on transportation and the automobile industry, there may be one obvious leader in the group. If the need is to get money from the school board or twist the superintendent's arm, there may be another obvious leader in the group. If the subject is learning theory, the leader may be the university person. I don't believe in conferred leadership; I believe in earned leadership, which comes from what people have to give. We require different forms of leadership.

What can be done to encourage the interchange of curriculum ideas between schools and districts?

That, in my experience, is one of the most difficult problems. In the northwest part of England there was a project involving an enormous number of teachers who were setting up curriculum development centers. I went to one of these centers and asked a teacher who was working there, "What do your colleagues in your school think of what

you're doing?" She said, "To tell you the truth, I don't tell them a great deal about it. They just think I'm having a free afternoon. I find it very difficult to communicate the enthusiasm that I'm experiencing here." That, to my mind, indicated a problem in the school. The general atmosphere was such that the teachers did not easily open up and express mutual trust. If I had been responsible for that particular school system, I would have been getting in there with the principal and the senior staff to do something about the problem because it was basically a management problem.

So then I said to the woman,"Well, what does the school down the road think about it?" "Oh," she said, "they are not involved in it." I can cite so many instances in which a school has struggled through all the difficulties of developing, for example, a ninth-grade humanities course, and a couple of years later you go to the school down the road and it is struggling with all the same difficulties. Why don't they go up the road for help? They are too busy.

There is a genuine difficulty of time and communications in getting interschool activity going, and I would want to approach the problems at different levels. It is up to the school board and the superintendent to encourage a more open and frank exchange between schools. At the secondary school level, the exchange should occur among specialists—geography teachers, social studies teachers, and so on. At the elementary level, where in England the class teacher handles most of the program, the district administrator should arrange an exchange of ideas. For example, a number of schools in Bristol were struggling with the concept of cooperative teaching, so we used one of the school closure days to bring everybody together and exchange views about opportunities, problems, and possible solutions. That is probably a way to begin—to identify some common problems that teachers want to share, and to bring the problems out.

4

Collaborative Research: Implications for Inservice Development

Edward A. Chittenden, Geraldine Charney, and Rhoda Kanevsky

This chapter is based on experiences in a project that has brought together teachers and researchers to study children's reading. The project has two major, interrelated purposes. The first, a substantive goal, is to conduct research on the variety of ways that children become readers. The second is to begin to develop a methodology that represents a more collaborative relationship between practitioner and researcher. In this chapter we examine the methodology from the teachers' viewpoint and consider its implications for inservice development.

The first section of the chapter describes the plan of the study and the nature of the teachers' involvement in collecting and analyzing classroom-based data. The second section deals with the significance of these processes for the teachers' analysis of learning and for curriculum planning. Although many other teachers in the project would probably share the views expressed here, this chapter is essentially the work of the three authors, one a researcher, the other two teachers. The quotations are taken from our own discussions of the topic.

Documentation and Description of Reading

A fundamental goal of the project is to document and analyze the different ways that children acquire the skills of beginning reading and progress toward reading proficiency. The fact that children exhibit individually distinct patterns in learning to read is widely accepted in much of the pedagogical literature and is supported by certain psycho-

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linguistic theories. However, documentation studies of such individual characteristics as styles, patterns of interests, rates of development, reading strategies, and ways of comprehending are almost nonexistent. Aside from a few interesting reading biographies, there has been very little basic descriptive work along these lines. There are many reasons for the neglect, but probably one of the most powerful influences has been a preoccupation with studying methods of reading instruction, in the hope of finding those that "work" for the vast majority of children. This project rests on the premise that the study of individuals will enlighten pedagogical methods, not the other way around.

Along with documentation of individual patterns, the project seeks to develop formulations about children's reading that have promise for use in instruction and that have implications for research and assessment. We hope to derive these formulations over time by comparing and contrasting data from individual documentations with the theoretical literature. The goal is to develop ways of describing reading that will have more theoretical substance than behavioral specifications or grade-level referents (grade norms) yet will be more clarly connected to classroom behavior than theory at a high level of abstraction.

Plan of the Project

Given the goals described above, the establishment of a close working relationship with teachers was a natural and necessary step. Historically, whether in research on reading or other areas of study, the potential contributions of insights and observations from experienced teachers have been overlooked, to the detriment of progress in educational research. Closing the so-called research-practice gap is not simply a matter of devising better systems to disseminate research findings; it touches on fundamental shortcomings inherent in conventional research designs in which the research has been poorly adapted to the complexities of classroom life and the perspective of the practitioner.

With such problems in mind, the project has systematically drawn on the observations and ideas of the participating teachers. Teachers have contributed to general planning (primarily during extended summer meetings), development of major data-collection procedures, and collection and analysis of data. The aim is to establish a pattern of reciprocity between teacher and researcher so that the perspective

and commitments of one may be contrasted and coordinated with the other. Although the professional roles of teacher and researcher obviously call for different capabilities and are responsive to different obligations, the project seeks to establish connections between the two to better investigate questions of mutual interest.

To date, the project has involved about 40 classroom teachers, a number of observers, and the research staff of the Early Education Group at the Educational Testing Service (ETS). The teachers and observers have all had substantial classroom experience, and many have been associated with advisory/teacher centers. In addition, a number participated in previous projects of the Early Education Group and in training programs in documentation conducted at the Prospect School in North Bennington, Vermont.

The basic unit of the study is a team consisting of a teacher, an observer, and an ETS staff member. Each team focuses on the reading progress of one or two children in the teacher's classroom. Data collection includes interviews with the children, samples of the children's written work, oral reading samples, and general classroom observations. Perhaps the most important form of data collection—probably unique—is the "descriptive interviews" with the teacher that are conducted three or four times a year. The interviews are a way of recording teachers' observations about the children they are following. To tap the practitioners' ways of observing, it has been important to have interview guidelines that systematically elicit observations without becoming a checklist. Such guidelines were developed with the teachers. The interviews have a definite plan and raise specific questions about a child's learning and development, but the questions are nonetheless open-ended. They start first with the teacher's primary impressions and observations and then probe or otherwise raise questions about topics the teacher has omitted or left unclarified. Interviews are conducted by either an observer or a researcher and typically last about 45 minutes. The excerpt below, taken from an interview conducted in the spring, illustrates the process.

> Teacher: Lately he's been reading biographies. He sometimes picks very hard books, and he will struggle for a long time with them. And then when I hear him read he really doesn't seem to have it. But he'll keep going as if he gets a sense of it. I don't think he's just word-calling; he's reading for himself.
>
> Interviewer: Do you think he can read more to himself than he can out loud?
>
> Teacher: I don't know. He sometimes can't tell me afterwards what

he's read. He has many limits. His vocabulary is coming along, but he doesn't have a lot of things to hang some of this onto—he doesn't have other handles—so that when he reads he has to be very concrete and go back to it. He can't extrapolate from it afterwards and say, "Well, this tells that Cesar Chavez started out this way." It's just too much for him.

Interviewer: So you mean if you would ask him a question, he would have to go right back and almost quote verbatim or read it off to you?

Teacher: Yes—I think so.

Interviewer: Can he find the answer if he goes back to look?

Teacher: Yes. And he'll sort of know if it's been there.

Interviewer: Yet [you said previously] in discussions he's able to generalize and extrapolate, which is different from how he handles the information he gets in reading.

Teacher: Yes. Maybe he just hasn't been talked to about books as much as some of the other children. On the other hand, he was able to handle the Franklin book very well because there's been an awful lot about Franklin in a general way. In this report he writes: "Benjamin Franklin made the first fireman's hat," and "He went on the first electric picnic" because it says in the book that Franklin made the first electric grill.

Twice a year (at midyear and year's end) "interpretive sessions" are held, with all three members of the team participating. In contrast to the interviews these sessions are less concerned with reporting data and more concerned with interpretation. Data from previous interviews, from general classroom observations, and from work samples are reviewed, and questions are raised concerning the nature of the child's progress in reading. For instance, one question deals with a child's pattern of interest in reading. Some beginning readers are greatly interested in words, in their configuration and patterns, and almost any printed matter can be of interest; others consistently search for meaning and tune into pictures and the total story; still others may look at reading primarily as a social activity; etc. Other questions concern the relationship between a child's reading and his or her expression of interests and abilities in different aspects of classroom functioning, for example, speech, writing, or the arts. The attempt is to place reading into a context of observations about a child as a person who has interests, abilities, and purposes. The interpretive sessions, which draw on the perspectives of teacher, observer, and researcher, give organization to the process of individual documentation. They also provide an essential forum for developing more general formulations to describe reading.

Some Effects of the Collaborative Process

Data Collection and Interpretation

From the teachers' point of view, the opportunity to make a record of observations over time and to review the data in a reflective, speculative manner has afforded an experience with little counterpart in daily teaching. Teachers are ordinarily expected to have answers and to resolve problems quickly and directly. Of necessity there is an immediacy to decision-making in teaching; problems are to be solved, not studied. These qualities of the teaching experience are in sharp contrast to the more reflective pace of the interviews and interpretive sessions, in which questions may be identified but need not be resolved. In fact, the meaning of what a child has been doing may very often be unclear and open to a variety of interpretations. The research pace has permitted a suspension of judgment and encouraged the consideration of alternative interpretations. In the words of the teachers,

> We usually tend to focus more on immediate plans and needs whereas this research is sometimes more abstract, more "cerebral," not as concerned about Monday morning. It asks us to look at things differently.
>
> Because there are so many pressing things, teachers may often feel they just can't afford the time. But the project forces teachers to deal with something beyond the immediate. I get something that I couldn't get if [I] only focused on tomorrow.
>
> The commitment to the project made record-keeping a priority, but I doubt that it could be sustained without such commitment. In the early months I didn't see where the documentation was going, but did it because I had agreed to . . . Later, when I looked back on the record I wished more teachers could do this because of its great clarification.

Not surprisingly the participation in collection and analysis of data over time has given the teachers a much fuller view of the learning of the particular children they are following. The bits and pieces of their many observations, the samples of children's work, and the comments of observers have begun to add up and provide a sense of proportion and individual coherence. The teachers feel strongly that they are better able to understand the meaning, from a child's point of view, of some particular interest or perhaps some particular problem.

> It has made it possible for me to not focus just on his problems with a basal book, but to notice positive things in his writing and in his interests in the animals. I have begun to see what is at stake for him in reading.

In the course of daily instruction teachers often base their decisions

on the "tip of an iceberg." They respond to a child's questions but are uncertain about what is really meant; they notice a child's choice but may not know what motivated it; they note that a child seems to have trouble sounding out some particular words but are uncertain about the general significance of their observation. Children have many ways of demonstrating their interests and expressing themselves, but teachers rarely have the chance to put these characteristics together in the systematic fashion of the study. Such a process of data collection and review has made clearer which kinds of behaviors are significant expressions of the child's learning and general functioning and which are more transitory or unimportant.

The teachers have followed one or two children in some detail, but what they have gained from their experience is more than the understanding of an individual child. It has as much to do with other children and with language development in general.

> Really, in the long run you learn more about children in general by looking at individuals than you do by talking about children in general. We teachers always talk about kids, but individuals give it something more.

> From looking closely at this one child's work, I can see how reading, writing, speaking are all part of language. There are qualities in her writing that I could see in her speaking . . . . It's something I sensed before, but now it's more clarified.

The study of individuals has had relevance for instruction in general partly because the teachers have selected children who they think will reveal the abilities and difficulties in learning that teachers customarily encounter. (For example, they generally have not chosen children with extreme emotional or perceptual problems.) More important, however, the procedures of the study (interview, work sample, and observation) are geared to "ordinary" classroom behaviors. Teachers have not been asked to create artificial situations for the children, change their own basic patterns of instruction, or use observation systems that they do not understand. Although the interviews have pressed the teachers for details, not just impressions, the structure of the interviews has been designed to extend and draw on the teachers' own formulations. Thus, many of the observations recorded in the interviews are observations that teachers might make ordinarily. What is not ordinary is the opportunity to collect and analyze such data over time.

Because the methods of the study are designed to obtain a substantial record of a child's learning, the methods have given the teach-

ers added perspective about themselves as decision-makers and about curriculum development in their classroom.

> The interview process itself makes directions emerge in what I do. It kind of clarifies what I've seen and then makes clearer what to do next. This is not generally a conscious process, but interviewing makes it more so.
>
> I verbalize things that wouldn't ordinarily be articulated. Having a record of successes as well as failures—keeping track—gets me away from an exclusive focus on "problems." It helps me plan in a more positive sense and helps keep perspective.

In summary, the study has asked teachers to observe and inquire into the phenomenon of learning in their own classrooms. The researchers have set the general rationale of the project and provided leadership in developing design and procedures, but they have done so in close consultation with the practitioners. We believe that the project's meaningfulness and interest to the teachers is directly contingent on such a collaborative exchange.

> The design in this study assumes there is something to learn from the child and from the teacher. In other designs teachers are presented with "Here is the hypothesis. Where's the fit?" Collaborative research would not be the same if the researchers assumed they were the only knowing ones.
>
> In this project, we're working on our own agenda, and we're able to develop it. Just the way kids do their best work when working on something they're interested in, so do we as teachers do best when working on something of direct interest to us.

Curriculum Development and the Analysis of Learning to Read

Almost everyone agrees that learning to read is a complex process, calling for the interplay of perceptual and cognitive capabilities, memory processes, motivation, and practice. Moreover, despite some significant theoretical advances in recent years, for the most part we actually know very little about the nature of such interplay.

The fact of agreement regarding the complexity of the process does not mean there is consensus about instructional implications. One school of thought, for instance, assumes that because reading is complex, we must seek methodologies that match reading in complexity—we must be sure that the learner acquires all the essential ingredients of the process. This view leads to attempts to identify "essential"

skills and subskills and to the search for learning hierarchies. It is most clearly exemplified in diagnostic-prescriptive systems that offer a sequential, step-by-step methodology. Although allowance is made for differing rates of progress, the sequence is deemed suitable for all children. In one form or another, this is probably the dominant view in commercial reading programs for the early grades.

A second school of thought, and one generally shared by teachers in the study, assumes that because learning to read is complex, the integrative capacities of the child must be supported; that is, the very complexity requires full expression of a child's learning resources. A corollary of this assumption is that different children will go at the task of reading in quite different ways and that although they may arrive at some common endpoints of ability, they will do so via different routes, different timing, and different sequences. The key problem here is not creating methodologies for teaching basic skills but identifying the kinds of learning resources and patterns that children possess. At the instructional level the problem is addressed by means of a curriculum characterized by a variety of materials and procedures, sufficient to be responsive to individual patterns of integration. This view is well expressed by Stannard (1976).

> We need to understand reading as an activity of searching for meaning, anticipating, conjecturing, of trying to bring the written page under control by rendering it increasingly predictable. All kinds of knowledge and understanding will be relevant to such an activity, not merely the memorized reaction to the visual sign. To make this case, I want to shift attention away from methodology of the teacher and examine the strategies of the learner, for it is only against this background that the role of the teacher can be considered and refined. (p. 2)

The danger of the first school of thought is that teachers get so involved in the management and application of method that method becomes the template through which children are seen. Thus, the child as a reader is depicted in terms of deficiencies in certain skills or progress on preestablished learning tasks, to such an extent that the child's patterns of interests and real learning capabilities are not detected and hence cannot be supported. The problem with the second school of thought is that teachers have had relatively little help in viewing reading as an integrative process, and thus, they have few models on which to base their analysis. Furthermore, the message that teachers receive from publishers of reading series and from testing programs tends to highlight the essential-skill view and obscure the integrative view. The present study, which asks teachers to focus on the learner's

strategies and consider the child's motivation, interests, and learning styles, in effect asks them to look at reading as an integrative process. In undertaking such an analysis, the teachers have found that inevitably their instruction and curriculum planning is directly linked to an enriched understanding of learning. These new perspectives on an individual child and new understandings about the nature of reading have become the source of new directions in instruction.

> The study itself did not suggest what I should do with him, or with any other child. Rather, it made me focus on many aspects of what he was up to, and from that came the new ideas for teaching. The study only asked me to observe and describe.
>
> Usual inservice courses present materials as an outline of things you could do. Theoretically, you come out of the course with ideas of what to do in the classroom, either around a topic, a skill, even an art. Yet when you go back to the classroom, for some reason the ideas often don't work. They become just a bag of tricks.
>
> This study doesn't tell you what to do. [It] doesn't even tell you how to do anything. It just gives you a different slant. You see things differently. It's not a bag of tricks. The kind of insights I developed from being in the study are applicable across a broad range of what I do . . . because it's a way of seeing, not a specified curriculum.

The implication of the above points seems clear. The view argues for approaches in curriculum development that are teacher-centered rather than teacher-proof. It places the teacher's understanding and interpretation of learning in a pivotal position. In effect, it acknowledges what has always been known—that the teacher's interpretation of instruction is central. It means too that evaluation of curriculum development projects and curriculum materials and packages should include a systematic examination of their effects on the teacher's understandings. If, for example, elaborate instructional systems have the effect of orienting the teacher's observations toward implementation of method and away from the analysis of individual learning, then this effect should be recognized as a cost of the system. More generally, curriculum development projects need to ask, What does the teacher learn from this curriculum?—a question as relevant as What do the children learn from it?

Conclusion

This project asks teachers to look closely at learning. The methods of the study have been developed to enhance teachers' observation and analysis. In effect, the project seeks to make it possible for teachers to

examine aspects of their teaching experience—to lift out observations from instructional concerns and become students of the phenomenon of learning in their own setting. From the teachers' point of view the procedures—that is, open-ended interviews, samples of children's work, and periodic review and interpretation of data—are not technically complicated. Moreover, the methods are responsive to the continuing life of the classroom and are for the most part unintrusive. The use of such methods has meant that the results of the research make sense to the practitioner—interpretation and analysis are based on data that are accessible and realistic. From a researcher's perspective this naturalistic approach, drawing heavily (although not exclusively) on the teacher, has yielded rich accounts of children learning to read based on descriptive data gathered over a one- to two-year period. The accounts offer the possibility for understanding children's development in reading within the broader context of continuities of interests and abilities.

Ordinarily teachers find it difficult to undertake a sustained, fresh look at fundamental aspects of their classroom experience. The intellectual isolation from colleagues, the inevitable crises in the school, the immediacy of instructional obligations and concerns—all mitigate against a thoughtful look at teaching or learning. To these can be added the influence of instructional packages and testing programs that invite categorization, but not observation, of learning. Moreover, historically teachers have been told that the source of knowledge about learning resides somewhere outside their classrooms, perhaps in curriculum or research labs. Given such conditions, it is not surprising to find some teachers so lacking confidence in their own views that they doubt the legitimacy of their experience with children when confronted with "expert" evidence that goes against it. Insofar as teachers are unable to look critically at their classrooms, their teaching suffers. It becomes uninteresting and takes on qualities of routine and mindless practice that characterize too many elementary schools.

The primary purpose of this project is to contribute to knowledge about children's reading. The support that the project provides for teachers is essential to such a goal. It is clear to us, however, that inservice support for inquiring into learning need not be dependent on the particular purposes and opportunities that such a research project offers. In fact, the evolution of the project's methods can be traced, to a great extent, to the successful experiences that some advisory/teacher centers have had in helping teachers reflect on their work with children (Bussis, Chittenden, & Amarel, 1976). Such advisory serv-

ices have sought to offset the restrictive pressures mentioned above and have offered teachers the opportunity and resources to look more clearly at teaching and learning. We share the conviction with these advisory programs that the understanding of learning is fundamental; that it should be (but often is not) a prerequisite for educational research; and that teaching methods, materials, and administrative arrangements must all ultimately be evaluated from the framework of our understanding of learning and instruction.

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5

Toward Ecology-Based Curriculum: A Model for Professional Growth Through Participatory Research and Development

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It is difficult to consider curriculum without simultaneously attending to many other concerns within an educational system. Warwick (1974) has identified three levels of such concerns: (a) concerns that center on the ideological context of schools as social institutions—primarily, philosophical and political questions about their purposes and provisions; (b) concerns that center on the educational knowledge context, or the curriculum; and (c) concerns that center on the notion of school as an agency of continuity and change in society.

This paper defines curriculum as the educational knowledge context of the classroom (that is, the total ecology of the classroom). In addition, it proposes a model for curriculum development and the professional growth of teachers, teacher trainers, and researchers through collaborative study of the classroom as an ecological unit, thus addressing Warwick's other two sets of concerns. Inherent in the proposed model are four important premises, each of which is introduced here briefly and subsequently discussed in greater depth.

First, by curriculum we do not mean only subject matter. Curriculum is a human construct; therefore, it must be considered in the context of the setting in which it occurs. *Time, place, activities, roles,* and *tensions* are as important as the facts and skills being taught. These variables constitute the base for viewing the *ecology of the classroom* and what goes on within it as the *curriculum* of that classroom.

Second, curriculum development historically has been based on a linear model of research, development, and dissemination, which has several weaknesses because it separates the three functions. Perhaps the most detrimental of these weaknesses is that the teacher is perceived only as the recipient of research, development, and dissemination—and coincidentally as the only professional educator who needs to "grow" in order to improve. The linear model of research, development, and dissemination advances the notion that the way to bring about teacher improvement is through the development and dissemination of educational products. Thus, curriculum content is conceived and developed in isolation from and independent of the complex setting in which it is expected to operate.

Third, curriculum development is accomplished most appropriately when teachers, teachers trainers, and researchers collaborate to inquire into teaching and learning processes in the context of the classroom as an ecological unit. Such an *interactive* approach to curriculum development results in professional growth for all participants.

Finally, professional growth should be a goal of all who participate in and contribute to the educational system. Thus, teacher trainers and researchers—as well as teachers—must become involved in a continuing, systematic process of learning, updating their own knowledge base and developing new skills in relation to their own expertise.

Ecology-Based Curriculum: A Definition

Over the years curriculum theorists have tended to limit their view of curriculum to issues centering on the selection and organization of subject matter (Franklin, 1976). Our purpose here is not to criticize this almost singular stance of curriculum theorists, but to make clear that we take issue with their view. Our primary dissatisfaction with it lies in its stress on what is to be learned and its almost total neglect of the setting and the process of learning. We maintain that one cannot consider what is to be learned without simultaneously considering all the context variables that produce the performance of both teacher and students and thus define the curriculum for a given classroom. Consideration of these context variables constitutes an *ecological* approach to defining curriculum.

The context variables in a classroom include:

1. *What is to be learned* (i.e., content, goals, objectives, skills). Learning is most efficiently accomplished in a classroom setting by attend-

ing to a carefully organized set of goals and objectives within a content area or across content areas. An ecology-based curriculum attends to two subsystems of goal-setting within a classroom—goal-setting by the students and goal-setting by the teacher (Bronfenbrenner, 1976; Kounin & Gump, 1974). A major task for the teacher, then, is to accommodate, plan for, and nurture an atmosphere in which meaning can be negotiated between these two often diverse sets of goals (Waller, 1965).

2. *Setting.* Bronfenbrenner (1976) uses four variables to describe a classroom environment ecologically as a *microsystem*:

> A *setting* is defined as a *place* in which the occupants engage in particular *activities* in particular *roles* (e.g., parent, teacher, pupil, etc.) for particular periods of *time*. (p. 5)

These four elements of setting define the space within which curriculum is given meaning. Consider, for example, some given goals, objectives, and skills for a content area (i.e., what is to be learned). How might the way in which they are accomplished differ as the setting differs? Some variables that might be considered within each element of setting appear in Table 2. The list is only a beginning; the variables are elaborated on in the discussion that follows and in the appendix.

Depending on which description one selects for each of the elements of setting, the curriculum will look quite different. For example, if one's goal is to teach students how to multiply fractions, *place, activities, roles* of teacher and students, and *time* become important because they interact to produce the performance of both students and teacher. Given the multiplication of fractions as the instructional task and each of the three classrooms (*places*) described, there are some decisions to be made. Under *activities*, should options be available to students, or should they all receive the same instruction simultaneously? Which student *roles* will be encouraged by the teacher, and what *role* will the teacher fill? Given the diverse goals, needs, and performance levels of students in multiplying fractions, how will *time* be used? Obviously many other questions need to be asked before one can describe the curriculum.

Teachers learn to ask and answer such questions by learning the texture of a given classroom and developing "a set of behaviors congruent with the environmental demands of that setting" (Doyle, 1977, p. 3). If teachers are accurate in their decisions, the result is a congruence between the perceptions of teacher and students in relation to the environment. If teachers' decisions are not accurate, that is, "if

Table 2. Some Elements of the Classroom as an Ecological Unit (A Preliminary List)

Elements of Setting	Some Possible Descriptions
Goals, objectives, and skills	1. For reading comprehension: Demonstrate understanding of a passage by paraphrasing what has been read. 2. For mathematics: Multiply fractions. 3. For art appreciation: Demonstrate understanding of pointalism by painting a picture using the technique.
Place	1. An open classroom in a stable, suburban community 2. A rural classroom containing three grades and a predominantly migrant population 3. An inner-city classroom in which 75% of the students represent three different minority groups
Activities	1. Classroom organized with learning stations; students given options of what to do 2. All students doing seat work from the same materials; no options available 3. Students participating in role-playing to develop concepts
Roles	1. Total class instruction: Teacher lectures, drills, questions; students respond, recite. 2. Small-group instruction: Teacher serves as resource, facilitator; students work together, help each other. 3. Individualized instruction: Teacher discusses student needs, prescribes specific instruction; students work with materials sequentially and individually.
Time	1. Determined by prescription—e.g., part of the fourth-grade curriculum is taught in spring; or "slow learners" receive instruction early in the morning, "fast learners" in the afternoon 2. Determined by readiness level of students

the locale into which the participants are placed, or the roles and activities in which they are asked to engage, do not occur frequently in their own subculture, then, regardless of how common such experiences may be in the society at large, they become ecologically invalid for the group in question" (Bronfenbrenner, 1976, p. 7).

It is this ecological fit of setting elements with teacher and students that produces what Bronfenbrenner calls "context validity" (p. 7). Conversely, of course, the mismatch of ecological setting elements with teacher and students can result in a nonproductive situation. In this light it is easy to hypothesize why so many experiments in implementing educational innovations have failed.

3. *Tensions.* In ecology-based curriculum the negotiation of the meaning of an instructional event for each student becomes the teacher's paramount goal. Given that each instructional event contains a particular set of experiences, perceptions, and definitions, negotiation is no easy task. Yet it has been accomplished by countless teachers with succeeding generations over time; otherwise how can we account for the transmission of knowledge from one generation to the next? Seaman, Esland, and Cosin (1972) refer to this phenomenon as "a continuous process whose finite character depends on the everyday assumptions and definitions of people in interactions" (p. 10). Daily it is "a working out by teacher and students together of a definition of the situation in terms of the needs and desires of all concerned . . . [which is] an evolving situation which is continually defined and redefined in terms of the attitudes and interests of the group as spontaneously functioning" (Waller, 1965, p. 331).

Naturally the negotiation of meaning—for a given instructional event, with the ecological elements of setting presented earlier, among and between teacher and students—is bound to produce *tensions.* Some tensions are reciprocal and can be observed as the "dynamic relations between learners and their surroundings" (Bronfenbrenner, 1976, p. 8). Other tensions are more covert and personal, such as psychological tensions within individuals or between groups. Or there may be sociological tensions, such as the introduction of a new student into a class or the beginning of a school year for everybody.

The tensions that arise as the meaning for an instructional event is negotiated not only affect the content and processes of the curriculum but also give meaning to the setting in which the curriculum becomes operable. Such tensions are not unfamiliar, and they must be accommodated if order is to result. They occur regularly in a school day and often are associated with discipline problems. Here, however, we use

tensions to describe the atmosphere that results when negotiation of the meaning of an instructional event becomes necessary in order to produce outcomes.

4. *Outcomes.* Traditionally curriculum theorists have limited their evidence of outcomes of a given instructional event to quantitative proof of student growth, usually obtained by administering an objective paper-and-pencil test. In ecology-based curriculum, learning is defined as "the outcome of *negotiations* between teachers and students about *meanings*, rather than [merely] the result of intellectual abilities or motivational states of the learner which is the more traditional cognitive view" (Hurn, 1976, p. 105). This definition responds to current viewpoints that emphasize the need to attend to qualitative data as well as quantitative data in classroom teaching and learning (Campbell, 1974; Cronbach, 1975; Snow, 1974). In addition, the establishment of outcomes based on meanings and perceptions as well as facts and skills meets the tests of construct, context, and phenomenological validity called for by Bronfenbrenner (1976).

In establishing such outcomes, teachers need to be aware not only of their own goals but also of the students' goals. The degree to which the goals of each are nurtured, accommodated, and negotiated provides the basis for establishing the outcomes for a given instructional event. The establishment of such outcomes makes it necessary to include the perceptions of all the participants and to collect evidence that goes beyond traditional, quantitative achievement testing.

So far, we have extended the traditional definition of curriculum into ecology-based curriculum. Next we shall apply this definition in a curriculum development paradigm in which the teacher, teacher trainer, and researcher work together.

An Interactive Model for Curriculum Development

In the linear model of research, development, and dissemination, a need is identified and research is carried out to find ways to meet the need. Based on this research, curriculums or classroom instructional systems are developed. After testing and evaluation, the new curriculums or systems are disseminated to users. Most frequently users are teachers who are expected to make the innovation work whether or not it meets the needs and expectations of the setting in which they and their students interact.

The linear model has several weaknesses. The most prominent of

them are: (a) the overriding view that teachers are the only professionals who must "grow" in order to improve education for students; (b) the assumption that teacher growth is best brought about by development and installation of a new product; and (c) the tendency to consider curriculum content and procedures as independent of the complex setting in which they operate.

Ecology-based curriculum cannot be developed under the linear model. To be relevant to the classroom, curriculum development must be *interactive* (Clark & Guba, 1974; House, 1975; Ward & Tikunoff, 1976). The notion of an interactive model for curriculum development[5] rests with the belief that by working as a team, participants in an ecological microsystem—the classroom, in this instance—can fruitfully interact to inquire into, understand, and build on knowledge of that microsystem. Through the interactiveness the functions of the linear model—research, development and/or training, and dissemination—can be accomplished simultaneously.

To develop ecology-based curriculum, the curriculum development team should include at minimum the teacher and the students in a given classroom. To these we would add as valuable resources a teacher trainer and a researcher.

Combining the expertise, perceptions, and insights of a teacher, students, teacher trainer, and researcher brings unusual power to a task. Because teachers and students are participants in the ecological microsystem (classroom) and therefore interact with each other within it, they are best able to attest to the phenomenological validity of instructional events (Bronfenbrenner, 1976). As nonparticipants in the classroom, both teacher trainer and researcher can describe interaction within the ecological microsystem from a more objective viewpoint.

An important point needs emphasis. The task of an interactive team is to develop curriculum. Thus, the researcher and the teacher trainer must be resources to the teacher, not evaluators of the teacher. Such a distinction is important primarily because the arena in which the activity takes place is the classroom of the teacher on the team. This fact implies a high degree of exposure for the teacher as he or she interacts with his or her students. The teacher must construe the purpose of the team to be helping, not evaluating. As Blumberg and Schmuck (1972) put it, the teacher must perceive that he or she is being "worked with," not "worked on."

[5] This model has been proposed for conducting research on teaching by Ward and Tikunoff (1976) and applied to context-based assessment of teaching in Tikunoff and Ward (1976b).

Obviously, putting such an interactive process into operation demands that the traditional roles of teacher, students, teacher trainer, and researcher take on new dimensions, which may in turn result in a redefinition of their roles. All, however, still bring particular perceptions and expertise to the task of developing ecology-based curriculum. These are described below.

Teacher. The teacher is an essential participant in designing and testing an ecology-based curriculum. He or she is the instructional expert—the one who is involved daily in the work of classrooms. The teacher's expertise is reflected in such contributions as the following:

- providing insight into what the curriculum is and does as he or she perceives it while teaching. These perceptions include personal intuitions as well as observed interactions and accomplishments;
- designing the instructional setting for the curriculum; monitoring and reporting the setting's effects on the interactions of students and teacher; and observing which students work comfortably in the setting and which students have difficulty;
- selecting the daily instructional activities and observing the tensions created by them; judging students' success with the activities; and reporting the intended and unintended social and academic outcomes of students' work with the activities;
- providing insight into the congruence between his or her own preferences for an instructional system and the setting; judging how well the instructional activities fit the instructional system and the students;
- judging the workability and validity of data-collection processes used by all team members.

Students. Students provide a critical data base: their own goals; their perceptions of what occurred and what was learned; and their perceptions of the validity and relevance of both the interactions among the participants and the knowledge and skills that were presented. Although it is not usual to involve students in curriculum development, the importance of student participation cannot be overlooked. Ways to involve students must be developed.

Teacher trainer. The teacher trainer has direct access to teachers—both preservice and inservice—for purposes of providing training and thus represents an important vehicle for dissemination. In interactive curriculum development the teacher trainer performs this task and is also involved in other tasks:

- analyzing, testing, and modifying data-collection procedures for use in training others;

- studying the classroom setting to identify the setting elements and the interactions that most nearly create the intended instructional content and environment. These elements and interactions, in turn, serve as a basis for analyzing and redesigning current training programs for teachers (preservice and inservice), curriculum specialists, and teaching and learning theorists;
- analyzing the classroom in terms of both observed and perceived reality and determining the implications of matches/mismatches for future training efforts.

Researcher. The researcher brings to the task the concerns, interests, and needs of the scientific inquirer. He or she guides the collection and interpretation of data in a systematic, careful manner. The researcher's tasks include:

- working with the teacher and the teacher trainer to generate questions for research before the existing curriculum is changed;
- proposing procedures for obtaining information that will help answer the above questions; collecting data regarding observed interactions and outcomes;
- performing collaborative analyses of the instructional setting and the goals and expectations of persons interacting with and within that setting in order to mold instruction to fit the ecology of the classroom;
- guiding the analysis of settings, interactions, and accomplishments in order to answer questions, generate new hypotheses, and provide a descriptive base for studying and interpreting what is.

Interactive curriculum development demands that participants expand their perspectives of teaching and learning. Carried out from the multiple perspectives that we have suggested, it provides new knowledge about teaching and learning. By providing insights into the relationship between curriculum and setting, interactive curriculum development also results in new skills for analyzing teaching and learning.

The notion of collaboration between teachers and others to address educational problems is not new. The term "action research," for instance, has been used to describe teacher participation in conducting research as well as to contrast field-based research with experimental educational research. Similar teacher involvement can be seen in research efforts that explore the belief systems of teachers (Bussis, Chittenden, & Amarel, 1976; Elliott, 1976-77). Other projects have included teachers for purposes of developing curriculums, most notably the projects of the late 1950s funded by the federal government. Although all of these efforts have included teachers as participants, they

differ from interactive curriculum development in the ways in which teachers are included. Four of the differences are enumerated below.

First, interactive curriculum development prescribes that teachers be involved as an integral part of the interactive team, providing equal input as classroom experts and sharing equally in decision-making. All decisions—determining what to study, how to study it, analyzing it, and reporting it—are made *with* the teacher. To date, in collaborative research efforts that we have investigated, the teacher has not been included in this way. Questions to be studied have usually been predetermined by the researcher or the funding agency.

One result of including teachers as active, equal members of an interactive curriculum development team is that research questions are more likely to be relevant to classroom needs. Intentionally, then, the questions to be studied center on problems in the classroom as perceived by teachers on the team. The teacher trainer and the researcher help to define these problems, confirming that they exist and aiding in describing them.

Second, previous efforts in collaborative research have included teachers and researchers, or teachers and curriculum people (and thus sometimes teacher trainers), but not all three, as the interactive model does. These three educators represent specific perspectives and bring to the effort skills and insights that are segregated as diverse functions under the linear model of research, development, and dissemination. The potential for usefulness of the results is considered to be more powerful with the interactive model.

Third, inclusion of a teacher trainer provides the opportunity to develop training processes and procedures even as curriculum is being developed. Typically development of training processes and procedures has been a separate function that has built on previous research and development. Under the interactive model the teacher trainer can develop and pilot-test in other settings the training processes and procedures that grow from his or her experience on an interactive team. This capability promises to close the gap between development and implementation.

Fourth, curriculum development under the interactive model is no less rigorous or scientific than curriculum development by conventional methods. Interactive curriculum development does not imply "a" methodology. Paradigms for curriculum development grow from the nature of the questions being asked, the solution being developed, and the ecology of the setting in which they are being studied. Thus, the rigors of scientific inquiry are even more necessary in interactive

curriculum development than in conventional curriculum development.

With these differences in mind, let us describe how the interactive model might be used to develop ecology-based curriculum.

A Scenario: The Use of the Interactive Model to Develop Ecology-Based Curriculum

The scenario we present here is fabricated. The authors are currently testing the interactive model of curriculum development in a 30-month study at two sites. Many of the ideas presented below result from experiences since early 1976, when the idea was initially conceptualized. The proposed strategies for participant involvement are based largely on research methodology developed by the authors at the Far West Laboratory for Educational Research and Development. The methodology has focused on both (a) ways to involve teachers as participant-observers in collecting data and (b) quantitative data for describing and analyzing the same instructional events.

When the interactive model of curriculum development is applied to a particular setting and a particular curriculum issue, three key strategies become the focus of team members' interactions: identifying a problem, inquiring into the problem, and determining how to resolve the problem. Each of the strategies is discussed below. We have purposely avoided discussing a specific curriculum issue or setting in favor of describing the process.

1. *Identifying a problem.* Typically curriculums have been developed to respond to specific educational needs present in particular kinds of students or particular settings. Even when teachers have been involved in developing curriculums, there has existed the problem of generalizing the curriculums to every student or classroom for which they are intended. Teachers have handled this problem by tailoring a curriculum to their own needs, the needs of their students, and the conditions of their classroom. They have understood that, depending on their students and classrooms the following year, the same curriculum might need to be retailored.

The interactive model offers an alternative process for developing curriculum. The first step in the process is identifying the problem. Given a team constituted at minimum of one teacher, one teacher trainer, and one researcher, on what will they focus their energies?

The teacher is the instructional expert for the particular classroom and therefore provides the most important initial input to this task.

The teacher knows the students and their needs. The teacher understands the subject matter to be covered for the year and its relationship to past and future schooling. The teacher is responsible for the instructional system in operation and has control of it. He or she probably has already identified a multitude of problems.

Other members of the team can provide valuable input. Once a problem has been identified, the first question that must be answered is whether the problem actually exists. If it does, then the nature of its existence must be determined. By this we mean, what does it look like? How is it perceived by the teacher? By the students? By the teacher trainer and researcher? Answers to these questions will provide a sound base for determining how to resolve the problem. The appendix outlines sample questions to be used to complete this task, particularly in relation to the ecological aspects of the classroom.

2. *Inquiring into the problem.* Once a problem has been identified, the interactive team must decide what to do about it. One way to go about this task is to inquire into its nature a bit further.

In the above task of identifying the problem a description of each of the elements of the classroom as an ecological system is necessary. Because of the composition of the interactive team, it is possible to include the perspectives of more than just the teacher. We have developed a strategy for collecting such information that has been adapted from the methodologies of sociologists and anthropologists.

Perspectives of each member of the interactive team can be thought of as "inside" and "outside" (Smith & Geoffrey, 1968). Teachers collect information from an inside perspective by serving as participant-observers. Outside perspectives are provided by nonparticipant-observers, whose skills are developed from the disciplines of sociology and anthropology. The intent is to get as much information as possible about a given instructional event in order to meet the test of phenomenological validity (Bronfenbrenner, 1976). In other words, what was the meaning of an event for all those who were involved in it or were observing it?

The process of participant- and nonparticipant-observation can be illustrated by some prior research (Tikunoff & Ward, 1976a). In early 1976 the three authors participated in two research studies that focused on the allocation and use of teaching and learning time in mathematics at the fourth-grade level. Stacy was one of nine teachers whose classrooms were studied; Tikunoff and Ward were the researchers. In the second of the two studies we wanted to look at decisions about the teacher's allocation and use of time for both individual students

and various kinds of instruction. It seemed paramount to use the teachers as primary sources of data, so four of the teachers volunteered to serve as participant-observers. Their observations provided "inside" data in addition to the "outside" data already being collected by ethnographers in each of the classrooms.

At the conclusion of the first two studies teachers participated in analyzing their own data by comparing their instructional settings and styles with others in the study. Emerging from these analyses was the question of classroom management. Although instruction seemed to flow smoothly for all the teachers, it became apparent that the first several weeks of a school year were critical to establishing a successful instructional system. To learn how a successful system was established, we would have to study classrooms in early September, not spring.

Thus, a third study was launched that inquired into how students are socialized into instructional systems. For the first seven weeks of the 1976-1977 school year, three of the nine teachers served as participant-observers while ethnographers sat in their classrooms all day as nonparticipant-observers.

This "observer" method of collecting data focuses on developing narrative descriptions of what actually occurred in instructional interactions. The nonparticipant-observer sits in the classroom and takes notes copiously and rapidly, capturing as much of the dialogue and interaction as possible. As soon as possible after the note-taking session, he or she organizes the notes and dictates them onto a cassette tape. The tape is then transcribed, resulting in a narrative description called a protocol, which serves as the primary base of information.

The participant-observer is somewhat more restricted. Obviously it is difficult to take many notes while one is involved in classroom instruction. Teachers in our studies solved this problem by taking brief notes and making cassette tapes as soon after teaching as possible. To help, the researchers together with the teachers developed a set of questions that focused on the important aspects under study. Again the tapes were transcribed into protocols.

Examples of protocols appear in Figures 1, 2, and 3. Figure 1 is a page from a protocol that was dictated by a nonparticipant-observer. It focuses on the interactions of teacher and students during mathematics instruction. Figure 2, also from a nonparticipant-observer protocol, focuses on the engagement styles of two students. Figure 3, an excerpt from one of the teacher's protocols, illustrates the kind of information the participant-observer contributes.

Figure 1. Nonparticipant-Observer Protocol (Ethnographer)

Teacher Number: 202
Student Number:
Date of Observation: September 23, 1976
Researcher Number: 2
Protocol Number: 23

As I began the observation I was sitting in zone two on top of a desk. I noticed that William was sitting alone before the school began, while the other kids were playing. He then joined them when they lined up.

8:02 am Children came into the class at 8:02 a.m. Teacher tells the kids to begin a particular task but I am unable to hear due to the noise. Again, Jesus, Juan, Lucille, Tracy, have shifted their seats. Margie and Sherry still sit in zone three, Margie is now sitting next to

8:05 am Jesus. The teacher is at her desk. Chris takes the "Yearling" answer cards from the window ledge over to the middle table. Most of the kids are not yet working. Those kids who are working are Robert, Junior, Alonzo T., Mark, and Robert. Julie is working on "Reading for Concepts." Teacher comes up to Julie, asks her if she wants to be in the dance club. Julie shakes her head, "No." Teacher pulls the drapes because the sun is bright coming into the room. Teacher tells

8:10 am Tracy to sit down. More of the kids have now begun to work. Teacher tells Bobby to pick out a "Yearling" book. He hasn't been working at this time. He goes to the book rack over on the window ledge. Marvin and Edward are at the back counter where the sink is. Chris joins them. They talk. The teacher calls to them and tells the boys if they want to talk about something to step outside. The teacher is at the middle of the room, working with Amalia. The class has still not settled into working. Teacher asks if anyone has the card for

8:15 am the "Yearling" book, "Johnny Texas." Apparently no one has the card. The teacher sits back down at the middle table. Teacher then calls Alma and Carmen to her at the middle table. She tells them that she's disappointed in them, and asks them to get to work. Junior grabs at Carmen as she leaves the teacher at the middle table. Teacher turns and looks at him with a stern expression on her face. She says something to him about yesterday and

8:20 am asks him to get to work. The teacher is still with Amalia at the middle table. Annabel and Melvina are working on "Reading for Concepts." All of the other kids are using

8:25 am the "Yearling" books. David yells out a question for the teacher. He asks if they should read the book first. The teacher tells him to go ahead. Paul isn't working on anything at this time. Nothing is on his desk. The teacher walks up to David. She says in a stern voice, "David! Are you going to sit or not?" Teacher then goes over to him and tells him that he can't keep switching his books. David has been going through the book rack and he'll take out one book, keep it for awhile, then put it back and get another book. He also had three or four books inside of his desk. Margie and Sherry are also at the book rack. The teacher tells them also that they can't keep switching books. She tells them to take their seats. They return to their seats.

8:30 am The teacher returns to the middle table. Robert and

Figure 2. Student Engagement Qualitative Data (Nonparticipant-Observer Protocol)

Student A

The teacher has picked out a red
picture on one of the push-pin boards to explain
characteristics. He is asking the students which
characteristic they can get from that, and they're
replying, length and width. He is acknowledging
this and asking them which tool. Some of the stu-
dents reply, the globe. Student A has had
his attention on the teacher the whole time, yet
he has not answered the questions with the students,
but has been sort of waiting for the answers and then
responding. The teacher is explaining about area and
says, "What would you use to measure area?" The
students respond, "A square." The teacher acknowledges
this and further explains the measurement of area,
using a square as your best tool.

At this point, Student A
is fiddling with his pencil. He is pointing up to
the ceiling with his pencil and moving his pencil
around and around as if he were drawing a picture on
the ceiling from far away. He then looks around
the room. The teacher is monitoring. Another student
has asked a question of the teacher, and Student A
looks up at the teacher and the other student, then he
looks around the room again. Student A is talking with the
student next to him. However, it is presumably about the
project they are doing since they seem to be comparing
worksheets.

Student B

Student B
is at the blackboard. He has written
8 plus 9 equals 17. (This refers to a square,
which is divided into sections 8 across and 9 down,
to the right of his addition problem.) The students
were telling him or helping him by telling him
to multiply it by 2. Finally he writes 17 times
2. However, the teacher has had to help him get
this on the blackboard. He steps back and lets the
teacher help him. The teacher then says, "What is
your answer?" He goes through the motions and says
"34." She tells him to write it large. He does so and
steps back, looks at it, and then walks to the book
shelves to the right of the rug area as you're facing
that blackboard. The teacher is about to hand out
worksheets.
The title
is "Write the Formula for Finding Area and
Perimeter for Each Shape." The teacher walks
over to the table facing the rug area and places
them down. Student B rushes quickly to
be the first one to get the two sheets. He then
takes them and walks back to his desk. He sits down
on his chair and then turns around and changes
chairs with the one behind him, then he pushes this
away completely and is on his knees. He is saying
out loud, "Area, area, I know what that is." He
turns around to look at the teacher, but there
doesn't seem to be any reason to do so. Then he
goes back to work for a while

Figure 3. Participant-Observer Protocol (Teacher)

Teacher Number: 101
Student Number:
Date of Observation: 9/21/76
Researcher Number:
Protocol Number: Daily Tape 9

beginning to rain. Around the corner from where their bike had broken down there was this house with a broken-down gate around it. They had to go up to the house and knock on the door. They had also seen a light in the third-story window of this very, very old, haunted-looking house. On the second knock on the door, the door very, very slowly creaked open, and then they were to finish the story from there. There were a few questions on what they could do and what they could not do. I asked them not to worry about spelling. I wanted them to finish the story and not worry too much about the spelling of the words, to do the best they could, not to share the story with each other, to just write what they felt their experience might be in such a situation. I gave them approximately twenty-five minutes to finish the story. Later on this afternoon in going over some of the stories, they're an absolute riot. Some of them are like deciphering a Nazi code during the second World War, but you get the general drift of things. Some of the students have an excellent sense of humor. It was really funny. Most of them in their stories got the hell out of the house as soon as they possibly could, and that really cracked me up. For the first creative-writing situation, especially being open-ended as I allowed this one to be, [they performed] far above my expectations. After this the students went out for recess. They involved themselves in Nation Ball games, a kickball game where you kick the ball and then the ball's thrown in and the person that pitched the ball grabs the ball, bounces it once, and has to put it through the hoop in a basket before the kid runs all the way around the bases. Again it's the boys and girls playing together, not just all the boys, no bickering, no bitching back and forth at each other, helping out each other, rooting for each other, and so on. A pleasant thing to watch, and I did not have to set the thing up. They did it on their own. Others were playing Nation Ball with another class. Some of the others were out in the jungle-gym area, but for the most part 90% of the children were engaged in some kind of sports recreation. We lined up for lunch. As I mentioned before, this is the only line I really have to walk over to the cafeteria. It was actually the boys' turn to go first, but they were screwing around in the line, and I said, "Well, girls go." They complained a little bit and I said, "Well, look around you. What's going down?" They straightened out a couple of guys and told them to shape up. By that time the girls had already left. A little bit of self-direction will help from the boys' standpoint, because it is kind of a give-and-take situation as far as who goes first, and that's important to them, I guess. When the students came back after lunch, I had not received an art project that I had asked for earlier from too

One form of protocol—the student's—is missing, primarily because we have not yet developed a way to involve students. As we stated earlier, it is important that students be involved so that the perspectives of all the participants in the instructional event are included.

This method of data collection is important for several reasons. First, it provides descriptive information about the quality of interactions. Heretofore, researchers have collected primarily quantitative information. Although such information is helpful, it tells one only about the frequency of events, not their nature.

Second, this method of data collection gives multiple perspectives on an instructional event. In the second of the three studies described earlier we wanted to determine the nature of an appropriate teaching move—that is, an instructional strategy appropriate to a given content, setting, and curriculum. We put the participant- and nonparticipant-observers together to use their data to identify appropriate moves. As part of the process, they had to discuss any situations in which they disagreed. Such discussion provided additional insight. For example, a nonparticipant-observer described one teacher who had begun a lesson and then, when the students had reached a point of high frustration, had stopped the lesson and moved on to something else. The nonparticipant-observer called this an example of inappropriate teaching. Using her own protocols of the situation, the teacher explained that in similar situations these particular students had done better when she stopped the instruction at their highest level of frustration and came back to it later. She had done so the next day, she pointed out, and had been able to get the concept across successfully. In conventional research, where only the nonparticipant-observer's information is available, judgments are often made on the basis of information uncorroborated by the teacher. Our own findings were limited, primarily because we did not have corroborative evidence from the students involved.

Earlier we listed the strengths and expertise each member of the team brings to the collaboration. With each team member focusing on the aspects of the inquiry that best reflect his or her concerns, the information that emerges is much richer than if only one viewpoint were considered.

3. *Determining how to resolve the problem.* Once a team has collected information about a problem, it must determine what to do.

Inquiring into a problem in the manner described above may suffice to resolve it. That is, brought to the consciousness of the teacher and the students, the problem might be resolved simply because it can be

discussed or because individual participants can attend to it.

If the problem is not resolved so readily, next steps are in order. Several possibilities are apparent. The teacher and teacher trainer may be interested in developing teaching and learning strategies, materials, and processes that attend to the problem. These would then become a new curriculum to be tested. The teacher can try out all the components while the teacher trainer pilot-tests them in other settings, both inservice and preservice. The researcher can help develop controls for the pilot test so that the effect of the curriculum can be systematically studied.

The problem may also be one on which research can and should be conducted. If so, the researcher will be interested in designing a piece of research, conducting it, and reporting the findings. The classroom in which the team has been working might not be a good setting for the research (e.g., because the subjects might be "contaminated"); the researcher might therefore want to select another setting or use both the classroom in which the team has been working and another classroom.

Another possibility for resolving the problem is to train other teachers to use the observation techniques described above. In our own experience teachers who served as participant-observers came away with new ways to monitor teaching and learning in their classrooms; they viewed their classrooms in ways that had not occurred to them before.

Obviously a fourth possibility is that, having focused on one problem, the team will identify additional concerns. If so, it may repeat the process of problem identification, inquiry, and resolution.

Professional Growth Through Interactive Curriculum Development

In the previous section we described how we personally have progressed toward an inquiry approach that can be used in interactive curriculum development. Our study of student socialization most closely approximated how interactive curriculum development might work, the shortcoming being that no teacher trainer was on the team. An important result of such interaction is professional growth for all participants. Throughout the previously mentioned studies teachers worked side-by-side with researchers, asking questions, making decisions about how to proceed, collecting data, and analyzing them. The

researchers reaffirmed what they knew about teachers—that the insights and special province of teaching need to be a part of the conceptualization of every piece of educational research and curriculum development. Teachers learned to observe what they were doing, record it, and reflect on it. They began to look at teaching and learning in new ways. Having another adult present, both at "magic moments" and when things went wrong, provided a basis for talking about what happened in the classroom and gaining insights into the curriculum. Although teacher training has not been a focus of our work to date, it is apparent that teachers learn new skills of observation by working on interactive curriculum development tasks. These skills can be captured by a teacher trainer and developed into training processes for other teachers.

We realize that the interactive curriculum development process we have proposed appears to be more complex than the fragmented linear approach. However, we believe that successful teachers already attend to the many facets of ecology-based curriculum. What is needed is both a system for collecting and making use of data already available and the resources of a researcher and a teacher trainer to capitalize on them.

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6

Multicultural Perspectives for Curriculum Development and Their Relationship to Inservice Education

Carl A. Grant and Susan L. Melnick

As the literature in education indicates, curriculum leaders have for years been concerned with the source or rationale for curriculum approaches and with the need for a guiding philosophical base. The learner, society, and subject matter have been identified as three primary sources (e.g., Bode, 1931; Giles, McCutchen, & Zechiel, 1942; Taba, 1962; and Tyler, 1950),[6] but curriculum theorists have neglected to give serious attention to the pluralistic racial and cultural dimensions of the sources. Rather, they have tended to debate which source should serve as the single organizing principle of curriculum, and integration of the sources as a conceptual framework for curriculum construction has not, for the most part, been encouraged.

Curriculum makers have also been concerned with the need for a guiding philosophical base for their curriculums. Hopkins (1941) noted the significance of philosophy:

> Philosophy has entered into every important decision that has ever been made about curriculum and teaching in the past and will continue to be the basis of every important decision in the future . . . . There is rarely a moment in a school day when a teacher is not con-

[6] There are many sources of curriculum identified in the literature. Eisner and Vallance (1974), for example, have defined five curriculum orientations: the cognitive-process approach, curriculum as technology, curriculum for self-actualization and consummatory experiences, curriculum for social reconstruction, and academic rationalism. Nevertheless, the learner, society, and subject matter as sources are generic to any discussion of curriculum development.

> fronted with occasions where philosophy is a vital part of action. An inventory of situations where philosophy was not used in curriculum and teaching would lead to a pile of chaff thrown out of educative experiences. (pp. 199-200)

The philosophy a school endorses dictates the atmosphere of learning; it gives direction to the manner in which teachers approach the structure of knowledge, regard society, and express concern for the individual. The philosophies of Calvin, Jefferson, and Dewey, for example, have at various times served as substantial influences in shaping the structure of our schools. Yet an analysis of these philosophical applications indicates that acceptance and affirmation of racial and cultural pluralism have received token attention at best. The reason has not been so much that these philosophies explicitly exclude racially and culturally different groups, but rather that they have not explicitly included these groups in a meaningful, integrated manner.

Appropriate curriculum reform for a pluralistic society demands a fundamental recognition, acceptance, and affirmation of all people, regardless of race, sex, or class. Even more important, affirmation of diversity requires that curriculum embody a rationale and a philosophy that are multicultural in form, content, and application. To achieve this affirmation, school districts must adopt a multicultural focus, recognize the teacher as a vital participant in curriculum development, and provide inservice programs specifically designed to effect multicultural curriculums.

Multicultural Education and Curriculum: A Philosophy and Rationale

Although pluralism has always existed in this country, as a society we have traditionally maligned diversity instead of welcoming, respecting, and appreciating it. With the passage of the Ethnic Heritage Studies Program Act in 1972, however, schools have been formally charged "to afford students opportunities to know more about the nature of their own heritage and to study the contributions of the cultural heritage of other ethnic groups of the nation." We believe that the public schools' comprehensive response to cultural pluralism must be multicultural education, which embodies a multicultural philosophy and focus.

The rationale for multicultural education emphasizes the intrinsic worth of each individual:

> The underlying basis of the belief that all people must be accorded respect regardless of their racial, ethnic, cultural, or religious background is a fundamental acceptance of the premise that all people (men and women) have intrinsic worth. If all people have intrinsic worth, it seems reasonable to conclude that all people should be accorded equal respect. Consequently, it should be the goal of society's socializing agencies—particularly the schools in this country—to instill and maintain such respect. (C. Grant, 1975b, p. 8)

In order to respect, value, and affirm the diversity that each child brings to the classroom, educational policies and practices must become multicultural in purpose and design. Curriculums, learning activities, and materials must be designed to eliminate ethnocentrism and affirm cultural diversity in schooling and society.

Although a variety of educational philosophies has guided curriculum development since the inception of American public schooling, no philosophy has explicitly integrated true affirmation of diversity into its tenets. Even the 1960s philosophy of social relevance manifested tokenism in curriculum, with supplementary courses, special or alternative projects, and external and work-study programs. In effect, the absence of a multicultural philosophy has often perpetuated racism, sexism, and classism in schools. Sins of omission have resulted in failure to recognize the contributions of individuals from particular groups; sins of commission have resulted in the depiction of various groups in negative, stereotypical ways. Many teachers either unconsciously or readily accept classroom experiences and activities of curriculum makers that are, at best, token efforts to teach respect for all people. A multicultural philosophy is essential for providing the conceptual basis and direction for educational aims and objectives. It can provide structure and purpose to educators and serve as both source and influence for curriculum development. As Zais (1976) suggests, the significance of culture in determining curriculum cannot be overestimated:

> The curriculum has been determined by man, his culture, and his social institutions. To the extent that he is aware of himself, his society, and his culture, he becomes a significant force in determining through the curriculum his own nature and the quality of his existence. To the extent that he is ignorant of his heritage and his present condition, however, man forfeits control over his schools and by default relegates the future of the race to the mercies of uncontrolled events. (p. 73)

In curriculum that is multicultural, the nature, content, and selection of subject matter must be responsive to our pluralistic society, and the

instructional techniques and strategies must be responsive to the varying needs and lifestyles of all learners. In addition to adopting an underlying philosophy of affirming pluralism, however, educators must also examine and apply sources and influences of curriculum from a multicultural perspective.

Sources for Curriculum Development: A Multicultural Perspective

The three sources of curriculum development identified above—the learner, society, and subject matter—will provide the direction for our discussion of curriculum development from a multicultural perspective.

The philosophy and psychological principles that guided studies of the learner, as evidenced by the child-centered schools, for instance, would seem to have been appropriate for addressing the needs, interests, and purposes of students who were racially and culturally different. The focus on the self-expression, needs, and interests of the individual learner could well have served as a means to develop a curriculum that was neither ethnocentric in nature nor essentially unresponsive to the needs of a diverse American population. The curriculum experiences of a child-centered school described by Rugg and Shumaker (1928), for example, provided a "program of work" with a wide range of activities that could have promoted acceptance and affirmation of cultural relativism. Themes and activities, such as "The Study of Eskimos" (Grade 1), "The Story of the Growth of Chicago" (Grade 3), "Colonial History" (Grade 5), and "Poems of American Life" (Grade 6), clearly indicated possibilities for pluralistic approaches. However, it is difficult to find examples in the child-centered movement of actual attempts to affirm cultural diversity.

Advocates of society as a source wanted to maintain a relevant connection between the real world and curriculum content. Analysis of a pluralistic society could have provided a wealth of possibilities for making this connection, but advocates of society as a source were basically concerned with adjusting students to existing social norms. Skilbeck (1975) refers to these advocates as "carrying on their particular pursuits ignorant of or indifferent to" (p. 29) a changing culture. This approach claimed to have analyzed the nature of society and society's demands on the individual as a basis for curriculum development. In fact, in its role as the "reflector" of society, it maintained the status quo and thus inhibited social change.

Besides serving as a source for curriculum development, society influences curriculum development. The nature of a society and the conditions within it are powerful forces for directing curriculum. A free and open society, for example, provides opportunities for healthy, critical debate and enables educators to design and implement curriculum necessary for all individuals to develop to their full potential. The nature of society helps answer such important questions as Who will be educated? What should the schools teach? and Who will be responsible for the education of children? Economic, social, and political factors that operate within a society also have a tremendous impact on curriculum development. In recent years, for example, technological innovations, wars, Congressional legislation, Supreme Court decisions, and the civil rights movement have influenced education in general and curriculum development in particular. Although the use of society as the major source continues to encourage debate among curriculum scholars, gr ater attention must be paid to the racial, cultural, and class dimensions of our society. Racially and culturally different individuals must be encouraged to contribute to, and receive rewards from, society.

Probably the oldest and most frequently used form of curriculum organization is subject-centered organization,[7] with its origins in Greek and Roman liberal arts studies. Although subject-centered organization transmits culture in terms of what knowledge is considered to be of greatest worth, subject matter is usually predetermined. As a result, the objectives of learning are limited in scope, and the "passive concept of learning" prevails (Taba, 1962, p. 390). The interests, needs, and experiences of students are often secondary to the mastery of subject matter. In short, subject-centered organization has tended to ignore the problems and needs of learners and society, while fostering specialized competence.

In 1960 Jerome Bruner, a primary advocate of discipline-centered curriculum organization, articulated the rationale that guided the curriculum reform movement of the post-Sputnik era: "The curriculum of a subject should be determined by the most fundamental understanding that can be achieved of the underlying principles that give structure to that subject" (p. 31). In 1971 Bruner virtually retracted the above statement and strongly criticized the discipline-centered approach:

[7] Many curriculum scholars, when discussing content organization, distinguish between subject-centered, discipline-centered, and broad-fields design. See, for example, Taba (1962 , pp. 384-395) and Zais (1976, pp. 397-408).

> I believe I would be quite satisfied to declare, if not a moratorium, then something of a de-emphasis on matters that have to do with the structure of history, the structure of physics, the nature of mathematical consistency, and deal with curriculum rather in the context of the problems that face us. We might better concern ourselves with how these problems can be solved, not just by practical action, but by putting knowledge, wherever we find it and in whatever form we find it, to work in these massive tasks . . . . The issue is one of man's capacity for creating a culture, society, and technology that not only feed him but keep him caring and belonging. (as quoted in Zais, 1976, p. 406)

Bruner further commented:

> We shall kill ourselves, as a society and as human beings, unless we address our efforts to redressing the deep, deep wounds that we inflict on the poor, the outcast, those who somehow do not fit within our caste system—be they black or dispossessed in any way. (as quoted in Tanner and Tanner, 1975, p. 279)

Bruner's acknowledgment of society's indifference to racially and culturally different groups in curriculum development eloquently and accurately characterizes the entire curriculum field. Schools must operate as instruments for the intelligent direction of social change, not merely as reflectors of society. Educators must take seriously Bruner's words, "We shall kill ourselves, as a society and as human beings . . .," and translate them into an agenda for action. This agenda must involve teachers in a meaningful and sustaining manner, wherein their role in curriculum development is clearly conceptualized and carried out.

The Role of the Teacher in Curriculum Development

Current literature on teacher centers, inservice education, teacher unions, and other professional organizations indicates a growing support for active teacher involvement in curriculum development. Yet the current consensus regarding the teacher's role is that although teachers should participate, either they do not have time to do so because of all their other school obligations, they do not have adequate knowledge of particular curriculum theories or the process of curriculum development as a whole, or they do not view participation as a professional responsibility (Zais, 1976, p. 477). Given these constraints, the pertinent question is, How can teachers participate? Resolution of this prob-

lem demands the creation of real opportunities through inservice education, which requires sufficient amounts of time during school hours, adequate training in curriculum theory and design, and acceptance by teachers and administrators alike of the teacher's professional responsibility for curriculum development.

Translated into more specific terms, the creation of real opportunities requires a definition of the teacher's role in curriculum development in terms of what each teacher in a given locale can and should be expected to do. Although "sufficient amounts of time during school hours," for example, will vary from district to district, "sufficient" should not signify an inservice session one afternoon per month. School districts should allow extended periods of time for regular involvement of teachers—as part of a teaching load—through additional summer employment, intensive short-term sessions, or leaves of absence from classroom duties.

In addition, teachers should have adequate training in curriculum theory and design. This training should include a broader understanding of curriculum foundations and principles in order to assure effective implementation. As Herron (1971) found, "Teachers, as a group, have little knowledge of the foundational aspects, or rationale, of . . . new programs. What they do with them, therefore, bears little resemblance to the uses for which they were designed" (pp. 47-52).

Blame for teacher inadequacy in curriculum development must be shared by teacher education institutions and state and local education agencies as well as teachers themselves. Teacher education institutions tend to omit substantive consideration of curriculum issues from preservice teacher preparation programs. This omission contributes to a tendency among teachers to abdicate responsibility by accepting curriculum specifications developed outside their classrooms. State and local education agencies tend to limit teacher decision-making in curriculum to operationalizing general policy in individual classrooms.

Discussing teacher responsibility in curriculum development, Unruh (1975) concluded:

> For teachers or their informed representatives to avoid involvement in decision-making about curriculum objectives is professionally irresponsible . . . . Part of [the] responsibility . . . is teacher recognition of the complex nature of curriculum development and the need for expertise of many varieties. If teachers themselves cannot contribute the competencies that are needed in the process . . . it is their responsibility either to develop these skills collectively or to invite other competent persons into the curriculum dialogue. (p. 106)

Teachers need a variety of skills to participate actively and effectively in curriculum development. These skills include working with groups to diagnose curriculum concerns, developing plans and objectives from these concerns, and translating the concerns into curriculum possibilities (Taba, 1962). Essentials for participation in curriculum development include (a) sufficient knowledge of the content of specific fields to select ideas and content samples, (b) sufficient knowledge of learners and the learning process to select and sequence learning activities, and (c) sufficient knowledge of procedures for diagnosing, evaluating, and interpreting data. Continuous self-improvement in curriculum competence should be the professional responsibility of each teacher. Local school districts can provide opportunities for such self-improvement through inservice programs designed to promote dialogue and inquiry among all participants in curriculum development.

Through a dialogue-inquiry model for inservice education (cf. Friedman, 1973), teachers and curriculum specialists can negotiate both the process and the content of curriculum development, implementation, and evaluation. Dialogue and inquiry can strengthen the four abilities necessary for participants to improve curriculum: (a) ability to question existing reality, (b) ability to draw general lessons from concrete experience, (c) ability to test those lessons in practice and (d) ability to examine results sincerely (Friedman, 1973, pp. 232-237). Teachers should not only understand and concur in the purposes of the curriculum they are to implement; they should also have a voice in decision-making that affects their individual classrooms. Equally important, curriculum designers must understand the applicability and feasibility of their efforts (Whitely, 1971, p. 45), an understanding that can be gained only through dialogue and inquiry with teachers who will eventually implement the curriculum.

Multicultural Curriculums and the Teacher's Role in Planned Change

The foregoing discussion of the teacher's role in curriculum development is broadly conceived. The role of the teacher in developing multicultural curriculums can be more specifically defined. Multicultural curriculums provide teachers and students alike with a framework for learning about an important facet of American society. The teacher's role in prizing diversity is crucial, and success in developing and implementing curriculums to meet the goals of multicultural education is largely dependent on the teacher.

In defining the roles of teachers and other educators in curriculum development, the need for curriculum to be planned must be kept uppermost in mind. A curriculum is, by most descriptions, similar to that proposed by Tanner and Tanner (1975):

> the planned and guided learning experiences and intended learning outcomes, formulated through the systematic reconstruction of knowledge and experience, under the auspices of the school, for the learner's continuous and willful growth in personal-social competence. (p. 45)

Most critics of curriculum, including Broudy (1966), Cremin (1956), Sand and Myers (1967), and Taba (1962), agree that curriculum approaches tend to be theoretically weak, to be piecemeal in design, to emphasize a single principle rather than total integration, and to foster a pattern of either-or thinking in both development and implementation. As Unruh (1975) urged,

> The challenge thus becomes one of taking curriculum development out of the "accidental" category and introducing some form of general rational input into planning, while maintaining the participation and integrity of the persons and groups involved. (p. 29)

To develop curriculums that respond to the prevalent neglect of pluralism in American schooling, school districts must develop comprehensive inservice programs for their instructional, administrative, and special services personnel. At the foundation of such programs should be recognition of the need for planned change to eliminate racism, sexism, and classism.[8]

According to Chin and Benne (1976),[9] there are three major types of strategies for effecting planned change: empirical-rational, power-coercive, and normative-reeducative. Empirical-rational strategies assume first, that people are "guided by reason" and second, "that they will utilize some rational calculus of self-interest in determining needed changes in behavior" (p. 24). Although simple and reasonable equity demands relevant curriculums and improved educational opportunities for all children, reason seems to have disappeared when one specifically examines, for example, representative reading scores, limited motivation to achieve among females, and dropout rates of minority students. Despite the condition of American education as described

[8] The following portion of this paper is adapted from *Developing and Implementing Multicultural In-Service Teacher Education Programs*, prepared by the authors for the National Council of States on Inservice Education, November 1976.

[9] The extended discussion of strategies for planned change that follows is based on the frameworks proposed by Chin and Benne.

by the *Report of the National Advisory Commission on Civil Disorders* (1968), schools and teacher preparation institutions alike have consistently maintained an ethnocentric focus. Empirical-rational strategies have had little, if any, effect on educational opportunities for the culturally different.

The second type of strategy, power-coercive, emphasizes the use of political, economic, legal, and/or moral sanctions to bring about desired change. Within the last 25 years, American courts and legislatures have issued mandates to eliminate segregated facilities; increase equitable educational opportunity for the linguistically different; prohibit discrimination in federal employment; expand programs for the education of handicapped children, bilingual learners, adults, and Native Americans; and prohibit sex discrimination in schooling. Despite these and similar mandates, as well as subsequent Executive Orders and concomitant sanctions for noncompliance, we as a nation have moved as if "with all deliberate sloth." Power-coercive strategies, by themselves, tend not to succeed because they seek to "change the masses through implementing political and economic goals deemed desirable" (Buchanan, 1975, p. 151) without making provisions to reeducate the people who are to implement the desired change:

> When a change has been legitimized by law, it is often assumed . . . that the desired change has been made, when in fact the only thing that has been accomplished is the act of bringing the force of legitimacy to bear on the desired change. Those who are to carry out the desired change are still without the new knowledge, new skills, new attitudes, and new value orientations with which to bring about the change. (p. 151)

Neither empirical-rational nor power-coercive strategies have effectively responded to the needs of a pluralistic nation. For inservice education to be effective, we must adopt a strategy that, in Associate Justice Brennan's terms, eliminates discrimination "root and branch" from America's schools.[10] To this end we propose using the third type of strategy, normative-reeducative, for inservice programs.

Normative-reeducative strategies assume that people are guided in their actions, not by reason or external coercion, but primarily by "socially funded and communicated meanings, norms, and institutions, in brief by a normative culture. At the personal level, [they] are guided by internalized meanings, habits, and values" (Chin and Benne, 1976, p. 31).

[10] Green v. County School Board of New Kent Co., Va., 391 U.S. 430 (1968).

> Changes in patterns of action or practice are, therefore, changes, not alone in the rational informational equipment of men, but at the personal level, in habits and values as well and, at the sociocultural level, changes are alterations in normative structures and in institutionalized roles and relationships, as well as in cognitive and perceptual orientations. (pp. 31-32)

Normative-reeducative strategies demand exploration and reformulation of one's transactions with forces in one's environment. They require people to participate in their own reeducation, which focuses comprehensively on normative, cognitive, and perceptual changes.

Normative reeducation is accomplished by change agents bringing direct planned intervention to bear on the lives of individuals whose behavior is to be altered. Such intervention requires recognition of the elements of effective reeducative strategies (Chin and Benne, 1976, pp. 31-32). When one applies these elements to potentially effective inservice education, a corollary set of elements emerges for multicultural inservice programs. Table 3 presents both sets of elements.

Form and Content of Multicultural Inservice Programs

Before appropriate and effective curriculums and educational strategies can be implemented, educators must address a new challenge—reeducation of professionals through inservice programs. We propose a three-phase process to develop an understanding among educators of the necessity for multicultural education and to promote a strong commitment to its implementation. The three phases are awareness and recognition, appreciation and acceptance, and affirmation.

The awareness-and-recognition phase entails interactions with oneself, with others, and with appropriate materials to understand the nature and impact of prejudice and discrimination. The appreciation-and-acceptance phase involves the acquisition of substantive knowledge to lead educators to an appreciation of racial, cultural, and individual variations as differences rather than deficiencies; the final stage of this phase should be the acceptance of our pluralistic society and a declaration of the need for multicultural education. The affirmation phase focuses on the actual development, implementation, and evaluation of multicultural experiences in the total school setting. Although each of the three phases has unique and specific emphases, all have shared and interrelated elements.

Table 3. Reeducative Strategies for Multicultural Inservice Teacher Education*

Reeducative Strategies	Multicultural Inservice Teacher Education Strategies
1. Emphasis should be placed on the client's "involvement in working out programs of change and improvement for himself" or herself.	1. Emphasis should be placed on the educator's involvement in working out programs of change and improvement for himself or herself and his or her students. Although inservice programs should be facilitated by individuals who are supportive of the desired change and knowledgeable about ways to effect this change, educators must feel a sense of direct ownership in the design, development, implementation, and evaluation of the programs.
2. Although more adequate information might be useful in bringing about the desired change, it is imperative that one consider the possibility that the problems "lie in the attitudes, values, norms, and the external and internal relationships" of clients.	2. To develop and implement multicultural curriculums, educators must have more adequate and accurate information related to the various dimensions of all cultures. For educators to use the newly acquired knowledge effectively, however, they must eliminate negative attitudes and pathological norms from their repertoire of beliefs and values.
3. Change agents must work "mutually and collaboratively" with clients to define and solve problems.	3. Programs of planned change relating to cultural pluralism demand collaborative efforts to define and resolve problems at hand openly and honestly. Support and involvement are required from all parties concerned—participants (instructional, administrative, and special services personnel), facilitators, community members, state departments of education, teacher organizations, and teacher preparation institutions alike.
4. "Nonconscious elements which impede problem solution must be brought into consciousness and publicly examined and reconstructed."	4. Normative reeducation requires a constant and consistent pattern of dialogue and inquiry through which educators can, in a nonthreatening environment, define and solve classroom problems that are essentially grounded in normative beliefs about culturally different students.

Table 3 continued

Reeducative Strategies	Multicultural Inservice Teacher Education Strategies
5. Methods, concepts, and resources of the behavioral sciences should be applied "selectively, relevantly, and appropriately" in order to resolve the problems at hand.	5. To effectively bring about multicultural curriculums, inservice programs must apply as many resources as possible from the behavioral sciences—"selectively, relevantly, and appropriately." Multicultural education requires curriculums different from that required for the conversion to metrics, and much more than inserting "una bomba" or "soul food" or lighting firecrackers for the Chinese New Year. It requires a total integration of all facets of life that constitute culture and therefore demands the widest range of resources possible for curriculum development and implementation.

*Strategies listed in the left-hand column are paraphrased from Chin and Benne, 1976, pages 32-33.

The first phase should be designed to increase self-awareness and self-understanding for each educator involved. This phase may represent the largest obstacle to achievement of multicultural education. Too often, educators demonstrate a lack of awareness of prejudice and discrimination. Indeed, some deny their very existence. Allport (1958) suggested that this denial takes two forms. Persons with deeply ingrained prejudices feel so insecure that acknowledging their prejudices is threatening. Others, who accept the status quo automatically, manifest this denial by assuming that the "prevailing system of caste and discrimination [is] . . . externally fixed" (p. 464). In Allport's words,

> Those who are deeply prejudiced are inclined to deny that they are prejudiced. Lacking personal insight, they are unable to take an objective view of conditions in their community [and in the nation as a whole]. Even a citizen without prejudices of his own is likely to blind himself to injustices and tensions which, if acknowledged, could only upset the even tenor of his life. (pp. 464-465)

Confrontations with one's feelings of prejudice are unsettling and difficult, but those who work with children must undertake this struggle if they sincerely hope to become more aware and understanding.

The awareness-and-recognition phase must begin by encouraging each individual to define his or her perceptions of racism, sexism, and

classism. Through a dialogue-inquiry approach (cf. Friedman, 1973) people can share their feelings, beliefs, and attitudes in order to clarify assumptions they hold about themselves and others. As Goodson (1973) explains,

> It is from dialogue, facilitated by the interpersonal competencies of participants, that the specific functions of inquiry (describing and evaluating reality, formulating and analyzing problems, setting goals, elaborating and examining alternative plans, acting to implement a plan for changing reality) are generated and given form and meaning. Dialogue activates inquiry. It enables group members to raise and answer questions and to state and consider alternatives regarding a specific function of inquiry. (p. 3)

In an inservice setting, the structured interaction of the dialogue-inquiry format facilitates meaningful communication among colleagues. Alternatives for improving the educational environment can thus be generated.

The awareness-and-recognition phase must also include an examination of the impact of prejudice and discrimination on individuals and groups. More important, it must explore the manner in which schools and other social institutions perpetuate discrimination. By examining areas such as the following, educators should develop a deepened insight into their own practices:

- traditional social, vocational, and educational patterns of minorities, women, and the handicapped;
- a class analysis of minorities and women;
- the legal status of women and enforcement of laws in relation to minorities, women, and the handicapped;
- religious doctrines and practices regarding minorities and women;
- employment policies and practices, along with differential incomes, for minorities, women, and the handicapped;
- enrollment patterns in institutions of higher learning;
- mass-media representation of minorities, women, and the handicapped.

In sum, the awareness-and-recognition phase can be translated into the following specific objectives as a minimum for inservice education:[11]

- clarification, analysis, and assessment of the values, beliefs, norms, and standards held by each individual;

[11] For a detailed list of objectives used in a normative-reeducative program in human relations, see Buchanan (1975, p. 160).

- examination of the forces of racism, sexism, and classism in society and the impact of these forces on the experience of both minority-group members and those of the majority culture (see C. Grant, 1975a);
- evaluation of the manner in which American institutions, especially schools, perpetuate discrimination and prejudice.[12]

The significance of this first phase of reeducation cannot be overstated; it must be addressed and accomplished before the ultimate goal of multicultural curriculums can be attained.

The second phase of reeducation must be consciously planned to promote appreciation and acceptance of racial, cultural, and individual differences and of their right to exist. This phase should provide educators with significant information about the various dimensions of races, cultures, and individuals. This can be accomplished through a variety of activities—workshops, seminars, formal courses, laboratory or microteaching, and informal and casual interaction. Long-term projects—to select, adapt, develop, and assess curriculum and materials—can also play an important role.

Educators need assistance in acquiring historical, psychological, sociological, physiological, political, economic, and linguistic information relevant to education for a pluralistic society. Substantive knowledge in these areas is necessary for educators to realize more fully the importance of incorporating pluralism daily into every facet of school life. The following examples in each of these areas suggest one direction that inservice education might take. The information discussed is by no means all-encompassing; it only touches the surface of information that can promote appreciation and acceptance of cultural pluralism.

1. *Historical information.* Educators should acquire historical information that identifies and substantiates contributions of individuals from all races and cultures, including examples from contemporary American life. The contributions of ordinary men and women as well as those of famous people should be discussed. Through such discussions educators can begin to realize the absurdity of celebrating different cultures only at specified times—for example, celebrating black culture only during Black History *Week* or Puerto Rican culture only on Puerto Rican Discovery *Day*—when they should be acknowledged throughout the school year.

[12] The distinction between the terms "discrimination" and "prejudice" is clearly made by Allport (1958): "Discrimination usually has to do with common cultural practices closely linked with the prevailing social system, whereas the term *prejudice* refers especially to the attitudinal structure of a given personality" (p. 476).

2. *Psychological and sociological information.* Psychology and sociology can provide information concerning similarities and differences among people. A psychological understanding of human behavior and human needs is essential to understand, for example, that all people desire satisfaction of such human needs as security, love, and self-esteem in their pursuit of self-actualization (Maslow, 1954). From a sociological standpoint, educators can more fully appreciate alternative lifestyles based on cultural patterns and preferences; roles and relationships in alternative family structures; socialization patterns; value systems; and the different ways in which people work, worship, and spend their leisure time. Noar (1971) appropriately summarized this issue:

> Development of [an educator's] sensitivity depends, to a considerable degree, upon knowledge of the environment in which a child has his being, of the social forces that impinge upon him, of the nature of his people. (p. 2)

3. *Physiological information.* Information regarding individual differences can equip educators to deal with occurrences that might make racially and physically different children scapegoats in the classroom. Each of us has unique fingerprints and teeth; our voices, heights, and weights are different; the color of our skin, eyes, and hair varies; and even the two sides of our faces are different from each other. An understanding that every human being is distinctly different from every other human being should promote an appreciation and acceptance in educators of the diversity and uniqueness among people.

4. *Economic and political information.* Economic and political topics for consideration are endless. Information on employment policies and practices and differential incomes for minorities, women, and the handicapped can aid educators in accepting the fact that inequities exist. The legal status of women, as well as the enforcement of laws in relation to minorities, women, and the handicapped are other areas where disparity could be considered. Through the acquisition of this kind of information educators can not only examine the manner in which they might perpetuate inequities in the classroom, but they can also acquaint children with the variety of economic and political options available.

5. *Linguistic information.* Information that clearly demonstrates the distinction between language differences and linguistic deficiencies might help educators grow in supporting a multilingual/multidialectal society (see Melnick, 1976). Ways in which the English language reflects and transmits information about both majority and minority

cultures should be acknowledged. Further, educators should understand the discriminatory power of racist and sexist language. A greater understanding of uses of language and communication styles as cultural tools should enable educators to more effectively promote appropriate communication in a classroom environment.

Critical analyses of instructional materials and media used in local classrooms can further encourage appreciation and acceptance. Through such analyses educators can become cognizant of the omissions, biases, and stereotypes that materials overtly and covertly display (see G. Grant, 1974). By determining how many minorities, women, and handicapped people are represented in children's materials, and by examining who plays what role, educators can more accurately perceive how cultural and individual differences are portrayed. Educators should also have extensive experiences in interpreting test results to help eliminate the tendency to direct culturally and individually different children into low-ability or special classes or groups. Through these and other similar learning experiences, inservice education can effectively succeed in developing in educators an appreciation and acceptance of America's pluralism. In essence, then, the knowledge gained through this phase would enable educators to declare a belief in the need to affirm cultural diversity.

The final phase of reeducation, affirmation, focuses on educators' developing, implementing, and evaluating multicultural experiences on a regular basis in the school setting. Educators can begin to meet the needs of *all* children by promoting positive self-concepts, fostering respect for all people, and encouraging equitable educational opportunities for each and every child.

Experiences for the affirmation phase should be based on the knowledge gained in the first two phases. Fundamental to affirmation is the inclusion of a wide range of historical and contemporary cultural content in curriculum, with specific focus on cultural and individual diversity in analyzing social and instructional dynamics. Sources for such content should include the established disciplines, scholarly research and scientific fact, experiential data, and affective data as reflected in the fine and performing arts.

Learning activities should not only acknowledge the existence of similarities and differences among people but also promote an examination of them. For example, every culture has an oral tradition through which favored stories, songs, poems, and proverbs have been passed down from one generation to the next. Such tales reflect the fantasies, facts, superstitions, ethical beliefs, and customs of a given culture. At

the same time, these tales present hopes, needs, experiences, and ideas common to people in general. By developing activities that contrast the folklore of varying cultures, teachers can help students appreciate similarities among people from diverse cultural groups and recognize cultural characteristics and social, political, and economic contexts through specific variations on common themes.

In addition to integrating cultural diversity into the total curriculum through learning activities, educators should also incorporate the cultural and individual experiences of children as living resources into classroom interaction. When discussing reading assignments with students, for example, teachers usually direct their questions to the students' experiences rather than solely to story recall or comprehension. To foster multiculturalism, however, teachers should encourage and pursue discussions of experiences that result from students' diverse backgrounds. By regarding the personal experiences of each child as valid and valuable contributions to the classroom, teachers can truly affirm diversity.

Furthermore, educators should regularly involve members of the local community and their wealth of resources in classroom activities (see Young, 1976). Teachers must, for example, recognize the various capabilities of community members, not only as aides or guest speakers on a wide range of topics, but also as regular participants in and contributors to classroom instruction. In addition, the community's physical resources should be regularly used as appropriate locations in and around which valid and relevant instruction can take place.

In these ways teachers can help children become aware of the nature and impact of prejudice and discrimination and can promote in them an appreciation and acceptance of cultural diversity. This awareness, appreciation, and acceptance, in turn, will aid students in affirming pluralism in their own right. Thus, by developing and implementing culturally relevant curriculums, activities, and experiences, educators can begin to promote alternative lifestyles and value orientations that should be recognized, accepted, and encouraged in a pluralistic society.

Conclusion

To affirm diversity in American society, school districts must adopt an agenda for action to reformulate and redirect the predominantly monocultural focus of schooling. Such an agenda must be based on a source and philosophy appropriate for multicultural curriculum devel-

opment. In addition, school districts must define the role of teachers as integral members of the curriculum development process and develop inservice programs to provide them with the necessary training for active participation. Only in this way can learning experiences in the classroom ultimately aid students in developing skills for effective, realistic, and sensitive interpersonal and intergroup relations; for social, economic, and political participation; and for interpretation and decision-making in a pluralistic society.

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7

School-Focused Curriculum Development and Inservice Teacher Education

Robert G. Gough

Discussion of the notion of curriculum development (or curriculum change or curriculum innovation) is likely to be less than adequate unless there is first a clarification of what curriculum is and how it became so. The term "curriculum" usually refers to the structural arrangement of areas of knowledge in schools. Such a use implies an objectivity in which knowledge is regarded as a defined set of facts constituting a cognitive "map" that exists quite independently of classroom activity. Teacher and students set out to acquire a portion of this externality, perhaps after some predigestion by the teacher.

Such a view is inadequate in that curriculum needs to be seen in addition as a product of what people say and do in classrooms. School knowledge thus becomes a social construct, derived in the main from the interactions of individuals and groups that are themselves socially and historically located in particular contexts. Knowledge then is seen as something that is not only transmitted but also socially constructed.

In a manner similar to the first view of curriculum above, curriculum development has largely been typified by centralized teams producing resource material, sometimes for teachers, sometimes for students, sometimes for both, in a framework that treats curriculum as material handed down by the innovators for the teacher to distribute. Just as curriculum is seen as independent of students (knowledge as independent of the knower) and teaching is seen in terms of a "transmission" model, so curriculum development is seen—in the research, development, and dissemination model at least—as the work of experts at the center, while at the periphery stands the teacher, viewed at best as a neutral transmitter of curriculum, at worst as someone who will foul it up (and so needs training to cope with it).

Schools Council Curriculum Projects

This seems to have been the model largely adopted by the early projects of the British Schools Council (and by the Nuffield Foundation projects that preceded them). The Schools Council for Curriculum and Examinations—to give its full title—was established in the mid 1960s and consists essentially of a set of committees and a small permanent staff whose major task is to service the committees. There are subject committees covering all areas of the curriculum, recommendations from which go to policy committees, called Steering Committees A, B, and C and concerned respectively with curriculum matters for students of ages 2-13, 11-16, and 14-18. The decisions of these committees are channeled into the executive Programme Committee, which determines priorities and, coordinating with the Finance Committee, allocates funds.

Thus, a proposal for a potential project passes through various committees, a majority of whose members (except for the Finance Committee) are practicing teachers. The Schools Council's program is financed jointly—and equally—by the local education authorities in a consortium and the United Kingdom's Department of Education and Science. However, the Schools Council is autonomous in determining the nature and extent of its program.

There is, then, extensive involvement of teachers in the working of the Council, and, of course, teachers are frequently members of project teams. In the light of such considerable participation by practicing teachers, it is perhaps surprising that the center-periphery model was not modified earlier. Those concerned may have been seduced by the rationality of the model (or perhaps it was considered the only model available). No doubt, curriculum development by centralized teams has some advantages. For example, it gathers the expertise and experience of a number of people in one place, allowing good communication and the concentration of resources. No doubt also, this style of curriculum development has produced some first-rate materials for both students and teachers. However, the vast amount of activity in the creation of materials at the center has not always been reflected in commensurate changes in classroom practice. This may have been largely because of inadequate dissemination procedures. Up to about three years ago, funding of Schools Council projects made no provision for dissemination and "after care," the practice being to let publishers take whatever measures they believed necessary to get the materials to appropriate audiences. Recently the need to build dissemination into the project at an early stage has been recognized.

It perhaps needs emphasizing that the Schools Council has no power to enforce the use of project materials in any school (neither, incidentally, has anyone else). It has been argued that in its desire not to be seen as seeking to interfere with the autonomy of the head teacher and the school staff, the Schools Council has been so reticent in its approach as to produce a negative reaction to project materials.

With all its shortcomings the Schools Council has made significant progress in producing a favorable climate for development and has made a tremendous breakthrough in involving practicing teachers in its work. A criticism that may be leveled is the tendency for curriculum development to take the form (as indicated earlier) of the production of materials by a central team, and the implications of this.

Teachers are often under great stress from coping with the very severe (and often extracurricular) demands made on them. They may be forgiven for regarding project materials—initially, anyway—as a lifeline, a ready-made package that will alleviate (if not cure) their troubles. The model here seems to be one in which solutions are sought for curriculum problems. But all too often attention is focused on surface symptoms rather than the underlying processes that affect curriculum outcomes. Consequently what tends to be acquired by teachers exposed to curriculum development is the surface manifestation of curriculum change (enshrined in resource "packs" perhaps); the "deep structure" of the curriculum process is hardly transmitted at all.

Clearly those who benefit most from curriculum projects are the project team members themselves. Hence ideally we need to think in terms of a teacher's undergoing a curriculum development experience in total—that is, diagnosis, design, production, implementation, and evaluation. The recent work of the Schools Council in providing support and resources for locally initiated programs of curriculum innovation has gone some way in this direction. For many people, however, curriculum development will be something done by others, and innovators face the problem of producing something that is appropriate, accessible, and acceptable to their larger population.

Shifting the Emphasis to Process and Practice

The emphasis needs shifting, then, toward a view of curriculum that has a concern with process rather than products. If one is not involved in selling a product, then one is not concerned with success in

some narrow sense (and after all, one can always be successful if one aims low enough). Teachers are not looked upon as deficient, requiring retraining to deal with the change. Teachers' (and students') classroom practices are seen as the source of curriculum, not just the transmitter of it. (This latter view is of value in indicating the shortcomings of the so-called "classical" or linear curriculum models, but it is itself inadequate in not taking account of the wider contexts of which teachers' activity is a part.)

In looking at inservice education and training for curriculum development, then, it seems appropriate to start from teachers' practice. Teachers are more likely to become involved in curriculum innovation if they can see how it applies to them in their individual situations. A central task for the teacher educator is to help teachers locate themselves in their particular context and to enable them to reflect on their practice and the features of the context that affect their practice.

The teacher seeking further professional development has tended to be confined to one of two possible routes, which for convenience may be labeled "academic" and "practical." The academic route has generally involved the seeking of further qualifications—a higher degree, a diploma, etc. (often in areas somewhat divorced from classroom realities). It thus has tended to bring higher status and rewards and, frequently, promotion to positions outside classroom teaching. The practical type of inservice education has been concerned with day-to-day, bread-and-butter issues—new methods, techniques in such areas as modern mathematics, approaches to geography, etc. Although very relevant to the improvement of work in classrooms, this approach has tended to bring little extrinsic reward. It is desirable and possible to combine these kinds of inservice education and produce programs that are both relevant, in terms of their relationship to what goes on in classrooms, and rigorous, in terms of their intellectual weight and their validity for accreditation purposes.

Inservice Curriculum Development: A School-Focused Model

The curriculum is the raison d'etre of schools. Teachers and administrators do, of course, devote much time to other matters, and necessarily so, but only to facilitate the central business of curriculum. It follows that curriculum development should be high on the agenda of any inservice teacher education program.

Much curriculum development has arisen in response to a perceived national need. What should not be ignored is the desirability of providing a supportive framework within which teachers can reflect on their individual curriculum contexts. Much can be accomplished by means of courses, conferences, seminars, and workshops with colleagues from various settings, but the increased interest in school-focused inservice education reflects a concern with particular schools and their needs. ("School focused" is used rather than "school based" because the latter might be taken to imply "school located." Frequently inservice work is appropriately located in a school; however, it might fruitfully be located elsewhere—for example, in a teacher center or a college—and still be school focused.)

A central theme for the professional development of a teacher is curriculum planning. There may be different kinds of emphasis, depending on such factors as the extent to which the curriculum is centrally determined and the extent to which individual schools and teachers possess autonomy in curriculum matters. However, all teachers have some degree of freedom with regard to their practice, and they all must come to terms with the curriculum implications of a changing society.

In the Materials for Curriculum Planning Unit of the Schools Council, we have suggested that curriculum planning involves consideration of a whole range of questions that are largely derived from or supplementary to three central questions: Why are you changing? Who are the people involved? What is the nature of the change? The "Why" questions seek to ascertain whether the involvement (and hence the level of commitment) stems from educational reasons, personal/social reasons, or other reasons (e.g., being press-ganged). The "Who" questions explore the status and credibility of those initiating, supporting, and opposing change, focusing attention on those who stand to gain or lose as a result. The "What" questions focus on the nature of the curriculum material—frequently the teacher's first point of contact with change. There is often confusion here because different meanings are placed on some of the terms employed. Teachers conversing about "integration" or "team-teaching" or "open education" may have widely differing images in their minds. The Unit therefore devotes attention to some conceptual clarification, some sharpening of the terminology.

Focusing on the "Why" and "What" of change, and the context within which change is operating, involves the teacher in an arduous, sometimes threatening, process. However, this involvement is likely

to lead to an "extended professional" outlook rather than a "restricted professional" outlook, and teachers will be involved with curriculum-making rather than curriculum-taking.

To help teachers in this enterprise, providers of inservice teacher education need to make available a whole variety of knowledge and skills. The traditional providers in the United Kingdom (e.g., the Department of Education and Science and the universities) have tended to operate on the principle of offering a menu of courses from which teachers choose those that most nearly approximate their needs. The growth and development of local Teachers' Centres has put more emphasis on getting practicing teachers to indicate their wants and needs and play a part in the design of activities to try to meet those needs.

The Evolution of Teachers Centres in Britain

It may be fruitful to consider the evolution of Teachers' Centres in Britain. The initial spurt in the growth of Teachers' Centres was as part of the Nuffield Foundation mathematics and junior science projects, which used the Teachers' Centres as distributors of project materials to participating schools, as places where the experiences of the teachers could be shared, and as venues for collecting and feeding back evaluative material to the project teams. Along with this dissemination function, the Teachers' Centres organized courses, workshops, seminars, etc. These latter activities stimulated the growth of Teachers' Centres in different areas because they were not necessarily related to any particular project and could be devised to fit the needs of particular schools and groups of schools. The teachers involved in the Nuffield Project were almost all from primary schools, and consequently their curriculum interests went wider than sciences or mathematics. The existing Teachers' Centres began to be used by these teachers for sharing ideas about the teaching of reading, for example, and for finding out about new kinds of resources that were becoming available. So most of the early Teachers' Centres that had been established for mathematics or science became multipurpose in their functions. About the same time, in areas that did not have Teachers' Centres, both local authority officers and teachers saw the potential benefits and began to establish their own. These Teachers' Centres were generally multipurpose from the outset.

The latter development, which constituted a second major phase in the growth of Teachers' Centres, saw a major shift of emphasis in

orientation. From a central concern with dissemination of curriculum material from certain national projects, more and more Teachers' Centres saw their primary task as providing support for teachers in their locale. (During this period also, Teachers' Centres were avowedly set up for curriculum development, this purpose often being reflected in the title of the establishment. Most of these Teachers' Centres, however, were concerned with the collection and collation—and only sometimes the creation—of resources for particular areas of the curriculum.) This support was manifested in information, technical services, specific inservice education activities directed at expressed teacher needs, and the existence of a neutral meeting place where teachers could share common interests—both professional and social. (In the inner-city areas in which the author's Teachers' Centre was located, this support also took the form of an accommodation bureau. New teachers coming to London for the first time had difficulty in finding adequate and reasonably priced places to live.) Some Teachers' Centres saw this supportive aspect of their work as necessary but not sufficient. That is, providing a support system was not enough, but provision of it was a prerequisite for the involvement of teachers in the agonizing and challenging process of curriculum change. Indeed, it may be argued that when new teacher centers are about to be established and they see their function largely as curriculum development, they need to ascertain that an adequate support system exists and, if not, build one into their activities.

Crudely, then, an evolutionary model may be represented:

Dissemination ⟶ Support ⟶ Curriculum Change

These are, of course, overlapping categories. Under the support provision, some Teachers' Centres would see the social club aspect as very important, especially where there is potential for awareness of common interests. It may be that in the early growth of Teachers' Centres in Britain, because the major function was dissemination of the Nuffield Foundation curriculum materials, a club-like atmosphere was engendered, and it has been retained to some degree.

There were variations in this pattern in that some Teachers' Centres started out by providing information and technical services together with some inservice training courses, and moved from this toward a club situation with social as well as professional aspects, no doubt contributing to the raising of teacher morale. From this base, explorations in curriculum change were undertaken, and hence more relevant and appropriate inservice education and training needs were diagnosed and provided. It was then possible to identify more adequately those

needs that could best be met by other agencies—for example, colleges, universities, or the inspectorate.

Inservice activities, including those aimed at curriculum change, have tended to be directed at individuals. For example, teachers from several schools (perhaps only one or two from each) might consider new content and new methods in mathematics. There is a need for a whole-school (or perhaps a department within a school) view of curriculum matters. Such a view is more likely to arise from a context in which the teachers have been encouraged to participate in the initiation, design, and execution of their own inservice activity. Such participation has been a crucial element in the success of Teachers' Centres in Britain. Curriculum development acquires a particular force when the impetus originates in a school and with support from a Teachers' Centre, say, is focused on that specific school with its peculiarities and idiosyncracies. Such curriculum development is school focused although it need not always be school located.

An expanded evolutionary framework might now look like this:

Information and Training ⟶ Technical Services ⟶ Club Activities ⟶ Inservice Education ⟶ Curriculum Development (general) ⟶ Curriculum Development (specific)

This sequence might be typical—perhaps even desirable—but it should not be viewed as hierarchical. All functions are important and should continue alongside each other. Indeed, many will derive strength from such juxtapositions. It is also important to see how these functions complement (or overlap) activities organized by other agencies. Hence the above framework might be extended to include "Articulation into Wider Inservice Network." However, what needs to be retained is the notion of teacher centers as teacher centered and quickly responsive to teachers' needs and wants. The desire to link with other agencies and institutions must not cause the responsiveness to become embedded in a mass of committee structures and consultations and hence delays in meeting the needs of the teachers.

Building A Network of Providing Agencies

There is a need to build up and sustain a network of providing agencies such that teachers may be put in contact with the personnel and resources—local, regional, or national—that can best cater to their requirements. Although it is tempting (and administratively convenient) to parcel out different kinds of inservice work to different institutions

(e.g., to have universities deal only with credit-bearing courses and teacher centers deal only with practical workshops), benefit is likely to accrue from some flexibility in procedures. Several Teachers' Centres in the United Kingdom have been the location for Open University courses staffed by practicing teachers, attended by practicing teachers, and eligible for accreditation. In like manner, university personnel may be able to make a significant contribution to a workshop dealing with approaches to primary mathematics, for example, or to a school-focused activity on the planning of an integrated humanities course.

It is within the school itself that the issues need to be diagnosed and the necessary resources defined. However, some kind of consultancy by the providing agencies could be fruitful. It seems useful to distinguish two kinds of consultancy—task consultancy and process consultancy. Task consultancy involves the consultant as a subject-matter expert, to help with a specific task to which his or her particular knowledge or expertise is directly applicable. Process consultancy involves the consultant as a catalyst, a "critical friend" who reflects back to a planning group the essence of their discussions, revealing inconsistencies, latent conflicts, unanswered questions, etc. The consultant could also provide a link with specific resources elsewhere and assist in freeing teachers to work more regularly on curriculum development.

Such provision could, and should, be only a part of teachers' total inservice experience. They will need different kinds and levels of inservice education at different stages of their careers (although at every stage there will be matters of curriculum development that will be of significance to them). The notion of teachers provided with the means of professional renewal, being intellectually stimulated in a supportive situation that keeps the focus on them as skilled practitioners in the classroom, might help bridge the chasm between educational theory and practice. It might also lead to the increment of skill, knowledge, awareness, and expertise gained from the inservice experience being retained in the school and not, as now, so often lost from it.

8

Models of Multidimensional Curriculum Development and Inservice Education

David K. Wallace and E. Brooks Smith [13]

In the last decade several different ways (models) have developed that illustrate the integration of curriculum development and inservice education. These models also illustrate multidimensional approaches. In this chapter the models and other approaches that are reported are drawn from American and British settings. There has been easy exchange between America and Britain because of their common language and some common interests. Particular professional and political developments in Britain spawned the "teachers' centre" model, the advisory model, and the Schools Council curriculum development model. Enthusiasts of open-concept ideas in the United States and elsewhere latched on to the "teachers' centre" and advisory models because they seemed to offer a means to implement curriculums. Also, the models put the teacher in the center of the action, which was consistent with the tenor of the times as teachers and teacher organizations began to exert more influence on decision-making.

At the same time American supervisory groups were busy redefining the role of supervisors and curriculum directors toward consulting and facilitating roles. Most of the big federal programs of the last decade provided for consortia and networks that included teachers working with community representatives, and sometimes student representatives, as a response to the cry for participatory democracy. "Continuing teacher education" and "professional development"

[13] Wallace and Smith wrote, paraphrased, condensed, and edited the material in this chapter. Authors of material on which they have drawn are acknowledged in appropriate places.

evolved as concepts to respond to pressures being placed on schools and teachers to add this or that new emphasis to curriculum and instruction. As teachers gained new political power through collective bargaining, they demanded to be put in the center of the curriculum development arena and to be given the time and resources to make curriculums relevant to their own and students' needs. Naturally, field-based and locally focused programs of inservice curriculum development became the means for involving teachers and students on site.

The following descriptions of models begin with programs as they exist in local schools. Later in the chapter there are more generalized descriptions of such models as teacher centers and advisory approaches.

A Dialectical Model for Curriculum Development Involving Child Learners, Teachers, and Researchers

Craig S. O'Connell

Curriculum emanates from the needs and interests of the learner and is developed by the teacher in dialogue with the learner. "Authentic education is not carried on by 'A' for 'B,' or by 'A' about 'B,' but rather by 'A' with 'B' " (Freire, 1970, p. 82). Curriculum development is, then, a dialectical process—the elaboration of the structure of thought of the learner and teacher in dialogue with one another and in interaction with the world about them.

There are three important considerations here. First, quite often the content of commercially designed curriculum is unrelated to an understanding of the thought development (and culture) of the student. The dialectical model, by contrast, implies a blending of "children's exploratory thinking with a coherent body of knowledge" (Landrum, 1976, p. 37). Further, it holds that thought and action are equally important sources of knowledge and are interdependent influences on human growth.

Second, a basic assumption postulates the teacher as a learner and the learner as a teacher. Teachers who work on questions of developmental theory can learn much from their practice with the student. Such effort can never be imposed; teachers must discover for them-

selves that they can learn from their students. In addition, students, in dialogue with one another, are often the best teachers.

Third, curriculum development cannot be separated from curriculum content, for the latter is not properly a static concept. Colleges of education and schools often transmit myths to the contrary, making teachers the agent of someone else's design and expecting students to become the repository of a reality that is motionless, static, compartmentalized, and predictable (Freire, 1970, p. 57). Freire called this the "banking concept" of education. It minimizes the teacher's and learner's development of the critical consciousness by which people transform their world. Certainly teachers must think more critically about the nature of their work (politically, economically, culturally, and aesthetically), the nature of the learning process, the content they are asked to teach, and the pedagogy they are asked to adopt. Questions must be raised, models must be demonstrated, and alternatives must be made available. Teachers must participate on every level.

An Example of the Dialectical Model

For four years a group of classroom teachers and researchers in New Haven, Connecticut, developed a social science curriculum with and for 8- to 10-year-old children.[14] Piaget maintains that around age 7, children enter a stage of "concrete operations." In effect the child begins to become capable of manipulating logical constructs and formulating a world view. We in the group understood our task to be elaborating the child's conceptions rather than imposing our adult world view on the child. Through the accumulation of data from classroom observations, discussions, and Piagetian clinical interviews, we attempted to understand the child's knowledge, reasoning, topics of interest, and questions. From here our group arrived at a pedagogical strategy that exposed children to a body of knowledge and challenged their critical thinking. We succeeded in exposing the children to knowledge basic to the fields of astronomy, world physical geography, zoology, and physical anthropology without imposing our thought forms on them. Our task was to engage children in critical observation, in constructing representational forms, in participating in structured and unstructured dialogue with one another, and in focusing on their own questions and problems. Among the questions

[14] The author was a teacher-member of this group. The project is described more fully by Landrum (1976).

that intrigued many 8-year-olds were: Why does the moon follow you when you walk? Why does the sun shine? Why do apes look like people? Where did the earth come from? How do volcanos erupt? The curriculum became a dialectical process for the children, as the following example illustrates.

Arriving at school one bright morning, one of my third graders noticed that the moon was still out. All the other children ran to see. This observation contradicted their world view. I showed them how to use the telescope in our classroom, and for one solid hour we all watched the moon "go down." The discussion that followed indicated that the children's minds were now working to synthesize this new piece of information. For weeks later the children devoured the printed materials on astronomy in the classroom.

Teachers also worked through their own states of cognitive development. For example, before I could abstractly understand the celestial mechanics of revolution and rotation, I had to manipulate representational objects (light bulb, softball, and ping pong ball) on the level of concrete operations. No amount of reading, drawing, or talking could have brought me to the same understanding of celestial mechanics. Only after I realized this fact could I and other teachers break through our school-trained provincialism. We began to read Piaget and Bruner on child development theory. I met with astronomers and anthropologists. My creative desires to learn what I could were genuinely sparked. And I was the teacher!

The research team made an important contribution. Child psychologists, Yale University professors (specialists in their fields), and teachers collaborated to collect and sift through the data from the classrooms. As we received and analyzed new pieces of information from the children, we developed and continually reworked our curriculum until we reached a consensus. It was not uncommon to find Yale professors talking with children, and classroom teachers theorizing about plate tectonics or cartography. The research team offered teachers ways of understanding child development and a language to conceptualize and describe their work. The capacity of children to understand and think logically about their world literally amazed us all, teachers and researchers alike.

This kind of collaborative effort, which emerges from the classroom and respects the rights and thinking of the children, can be an authentic model of curriculum development and inservice training. Ultimately a critique of any curriculum project or model of curriculum development and inservice training must ask a number of questions

that are raised by the dialectical model:

- To what extent does the learner participate in the development of the curriculum? Are the strengths and values of the learner recognized?
- To what extent does the classroom teacher participate in the development of the curriculum? What are the constraints? Are the strengths of the teacher recognized? Has the program been imposed on teachers?
- What is the cultural and aesthetic value of the project?
- To what extent does the project contribute to the growth and critical development of the learner and the teacher?
- What are the ultimate goals of the research and the curriculum, and in whose interests will they be used?

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A Personal Model of Curriculum Development

Carol Newman

Over the years the meaning of the term "curriculum" seems to have shifted back and forth from predetermined courses of study or bodies of knowledge to personal interests and experiences brought to school by each student. From my experience as a learner, teacher, and resource person, curriculum does not rest exclusively in either area. Instead, curriculum incorporates all the learning experiences and interactions, ideas and interests, and the many other planned and unplanned aspects of schooling. Anything that transpires within, or as an extension of, the school has the potential to be part of a formal or informal curriculum. Curriculum includes people, places, things, and processes, all on an integrated basis, and ideally it pursues them through a personal process of inquiry.

Derived from this definition of curriculum, curriculum devel-

opment is a designing process that weaves interests, abilities, needs, learning styles, values, and perceptions together with areas of knowledge, skills, and materials. Through this designing process the why, what, and how of learning are explored and planned.

The Importance of the Experience

Although the designing process may result in a useful product—a curriculum guide or program of some sort—often too much attention is paid to the curriculum itself and not enough to the learning that results from the experience of developing the curriculum. This experience has long-lasting and transferable meaning. Curriculum plans and guides often carry the most value for the individuals involved in developing them. For the teacher who uses a curriculum but is not involved in its development, a sense of ownership evolves only when that teacher alters or adapts the curriculum to meet the needs of the individual situation. Meaningful curriculum development requires personal tailoring.

Personal tailoring is also a key ingredient for inservice education that promotes teacher growth and development. Inservice education should enhance teachers' interactions by involving teachers as both learners and teachers. This involvement should be designed with and by teachers; it should not be done "to" them! As with curriculum development, inservice education should reflect teachers' needs and interests.

A Teacher Center Model for Personalizing Curriculum Development

With this perspective I will describe the efforts of the Charlotte-Mecklenburg Teaching/Learning Center to engage teachers in curriculum development. At the Center our energies focus on creating an informal and rich environment that encourages growth and sharing among teachers, and on supporting and working with teachers in terms of their perceived needs and interests. Our services are geared to the "whole" teacher, on both a professional and personal level. Throughout our interactions we relate to teachers in a way that is consistent with how we hope they will relate to their students. We realize that in many respects we are modeling an approach to learning.

The Center includes programs and resources that range from workshops (such as Self-Esteem, Reading in the Content Area, Exploring Nature Trails, Puppetry, and Swap Shops), facilities for designing materials, displays, audiovisual equipment, and a recycling corner, to human relations training, counseling services, and support groups. Each of these resources can be viewed and used as a starting point for curriculum development.

Teachers are actively involved in the activities of the Center. We hold fast to the notion of working with teachers in areas in which they demonstrate interest. Our function is not to offer instant or packaged solutions, but rather to explore extensions and possibilities together with the teacher, drawing on the strengths, skills, questions, and resources that he or she brings to the situation.

To insure direct teacher input into the environment, resources, and program planning of the Center, we are developing area Teachers' Advisory Groups. Through them we will foster and support teacher ownership of the Center, which is essential to its existence.

Curriculum development evolves gradually and in different ways. As a result of various workshops a teacher may want to develop activities in science or self-esteem. A high school staff may be interested in creating a curriculum that makes use of community resources. Another teacher may request help in extending the block corner in his classroom. Someone else may be interested in finding ways of integrating students' interests into the curriculum.

Our approach to any such request includes an emphasis on joint problem-solving, active participation, and involvement of the individuals who will be affected by a particular decision. Whenever possible, students are included in planning, developing, and evaluating rather than simply being involved in the implementation. Too often curriculum is created without input from the very people for whom it is meant.

Examples of the Personalized Model at Work

Following are some examples of work with teachers in beginning to develop curriculum. For the kindergarten teacher who wanted to extend the block corner, we started with a brainstorming process that can also be used with students. The brainstorming focused on ways of working with blocks, other materials that might be incorporated into the block corner, and ways of integrating blocks with other areas. All of this led to a flowchart, a way of organizing ideas. We then turned

to specific learning strategies, timing, room arrangement, management, outside resources, and ultimately some means of evaluating the experiences. We viewed some filmstrips that explored the many uses and potential of working with blocks; this activity led to further discussion. In addition, the Center staff suggested a visit and meeting with a teacher who had developed and extended experiences for the block area in his classroom.

At the secondary level we recently worked with a team of three teachers who wanted to explore ways of integrating English, history, and outdoor skills while drawing on and visiting community resources. After an initial planning session, the teachers decided to begin with some group-building. We then examined student expectations, student needs, and student strengths. Using this information as a framework, we looked at the topic that would serve as the focal point—the Great Depression of the 1930s. We recalled an outdoor skills workshop we had previously been involved in that included a city search. Drawing on that experience, we each developed a list of possible experiences that would use city resources and at the same time relate to the topic. Because we each approached the topic from a different perspective, we ended up with a good blend of experiences—visits to the Stock Exchange, banks, community people who lived through the experience, a flea market, and several other places.

The next step was a designing process. In some areas we needed more information. We had to do more of our own exploring and discussing in order to finalize our plans. We needed student input. What did they already know about the topic? What did they want to know? How could we make the experiences of the 1930s come alive? What relationships could they draw between the 1930s and the 1970s? How would they share their experiences after visiting different places in the city? There were many questions we still needed to answer and several areas that still needed planning. But we had made some initial steps in developing a curriculum that reflected the needs of the teachers and the students.

A third type of curriculum development in which we have been involved is interdisciplinary, drawing together resource teachers in foreign languages, social studies, and home economics. The effort began with the home economics resource teacher and me exploring the possibilities of a Center workshop on foods of different cultures. As we discussed the different aspects of the countries and cultures we might include in the workshop, it seemed natural to involve the social studies resource teacher. Then as we started naming different foods

and the references and derivations of those names, it made perfect sense to involve the foreign language resource teacher also. We thus moved from a singular approach to a subject area to a naturally integrated approach that explored many facets of the learning experience. With this approach we viewed cooking within its natural context and in connection with other areas that it affects and by which it is affected. A team of teachers and community people led each workshop session and coordinated the experience in a way that ingrated cooking, language, social customs, and history. Our title for the workshop was "Cultures, Customs, and Cuisine of Five Countries, or Eat Your Way Around the World!"

Sometimes an idea for curriculum stems from certain material in the recycling corner of the Center. Recently a teacher was looking at some beautiful colored strips of blanket binding. In the next bin there were some wood scraps. Suddenly it all clicked and the idea of constructing a loom was on its way. From that initial project this teacher's class became interested and involved in different types of weaving with a variety of different materials.

Concrete materials, a desire to help students take next steps, and an interest in using and involving community resources—these are some of our stimuli for curriculum development. Regardless of the impetus, we try to keep teachers open to and aware of both affective and cognitive needs. Similarly we encourage and maintain a focus on both process skills and content areas. Just as the Center tries to respond to the whole teacher, our approach to curriculum development includes meeting the needs of the whole student.

Closing the Preservice-Inservice Gap: A Collaborative Model for Curriculum and Instructional Development on Site

E. Brooks Smith and David K. Wallace

Closing the research-to-practice gap can be accomplished in part by combining preservice and inservice teacher education and building the program around curriculum development on site. Collaboration between the teacher training institution, the school system, teacher organizations, and community becomes a means for bringing the uni-

versity on site to work with school personnel and a local community toward curriculum goals they define. Faculty agree voluntarily to cluster and organize themselves to advance certain educational goals. The following goals were developed by a steering committee representing the above professional groups:

- to create instruction for children and young people that will advance their learning in whatever areas the teacher and his or her consortium colleagues choose to work;
- to work toward new curriculum modules by injecting new needs into present curriculum designs;
- to give experienced teachers on-the-job opportunities to work on their own instructional planning and curriculum-making with the assistance of a resident service team of specialists. The education student initially assists the teacher and later stands in for the teacher at least one morning per week while the teacher attends seminars or workshops or works on individual projects with the service team;
- to give university faculty and school district staff opportunities to work in realistic school settings with teachers on curriculum and instructional development, proposing, testing, and reformulating strategies and designs;
- to give novice teachers (education students, student teachers, and interns) opportunities to work as team members with experienced teachers who are working on their professional development by improving instruction in their classrooms. The novice teachers learn the process of instructional improvement as part of learning to teach through some independent teaching and co-teaching, through companion seminars (the same as those offered to teachers), and through individual projects with the service team.

Structure: An Operational Illustration

There are three possible operational stages. Teachers can be involved in one or eventually in all three if they wish. They become involved in the stages consecutively.

Stage 1: Instructional Innovation (one or two terms before being interspersed with Stage 2)

Six to twelve student teachers are assigned to a school or a geographical cluster of two schools in which 6-12 teachers have volunteered to work for a quarter on improving their classroom instruction and to work with an education student for that time. A college faculty

member and a school district consultant are assigned to work with the education students and the inservice teachers. The college faculty member gets credit toward his or her teaching load (one teaching hour per two or three education students). Typically, senior faculty would devote five teaching-load hours (one-half load) to this work. The school district consultant is assigned as part of his or her supervisory load to work with the teachers in the field. A local school district curriculum staff member and the school principal may join the team.

The instructional team includes the experienced teacher and the education student. The student serves as an assistant teacher, learning to teach while co-teaching with the experienced teacher. They plan and teach together, basing some of their instruction on experimental plans developed with the service team.

The service team includes the college faculty member and the school district consultant. They "live in" the school one full day every week for the term, following initial orientation meetings when the teachers describe needs and formulate objectives for instructional improvement. They work with the teachers and education students in planning and developing resources and evaluation techniques through seminars, workshops, and individual conferences. They share equally in planning, instruction, and supervision of all aspects of the project.

A typical schedule for the service team's day in the school is:

8:30 a.m.- 9:10 a.m.	Teachers and education students go over plans for the day and get youngsters started on their work.
9:15 a.m.-11:15 a.m.	Teachers meet in seminar, workshop, or independent-study situations to work on their improvement plans with the service team. Education students teach independently in the classroom. The college faculty member may use some of the morning time to visit the classrooms where education students are teaching. He or she will also join the school district consultant in the latter's work with the teachers.
11:30 a.m.- 1:30 p.m. (or after school)	A seminar is held for education students. The same topics, teaching ideas, and approaches as those on the teachers' agenda are discussed and shared. This activity may be alternated with individual student conferences every second or third week.

Stage 2: Evolving Curriculum Development (one or two terms following Stage 1 or interspersed with Stage 1 over a school year)

Education students are deployed in the same clusters and with the same teachers. (The students may be different each term.) The emphasis in Stage 2 is to extend curriculum plans and develop resources for sustaining the innovative thrusts of Stage 1. The teacher seminar time is used to describe long-range goals and immediate objectives, conceptual frameworks, process goals, instructional strategies, and assessment techniques. General outlines and sample resource studies or units are generated, and resulting instructional modules are tested and redone. The service team works with teachers and education students in the classroom during the morning and afternoon. A student seminar is held over the noon hour. Teachers wishing graduate credit for their work take a Curriculum Development Practicum for one or two terms at Wayne State University or another local institution.

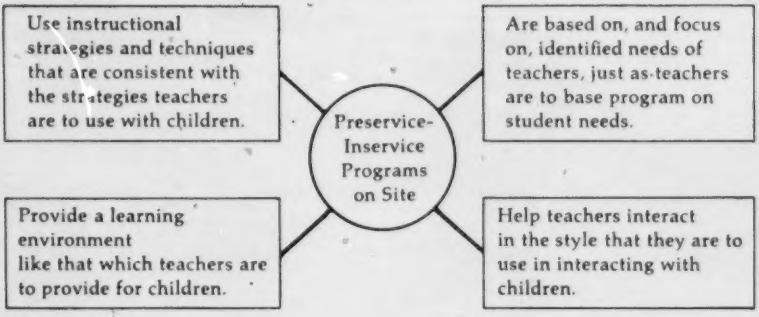
Stage 3: Curriculum and Instructional Research (one or two additional years on campus for teachers wishing to bring this focus into their careers)

During Stages 1 and 2, teachers may be engaged in a master's degree program and the courses Field Study and Curriculum Research may be applicable to their program with the approval of their advisor. Stage 3 is available to those teachers who wish to become candidates for the specialist certificate or the doctoral degree in teacher education or educational leadership. They are expected to continue their field work in curriculum and instruction while taking key advanced courses on campus. Teachers in this stage may become sponsors for probationary teachers and/or interns in their local districts, or they may become curriculum consultants in local or intermediate school districts.

Methods: Modeling in Inservice Education

When inservice programs are responsive to teacher needs and give teachers learning experiences that are models of desired outcomes, the result can be teachers who have experienced decision-making about their own curriculum and who have experienced learning as they want to have children experience learning (see Figure 4). Then teachers will feel more at ease and competent in making classroom curriculum decisions and be more sensitive to what happens to children as learners (Davidson, 1977).

Figure 4. Factors That Model Teacher and Student Programs


Use instructional strategies and techniques that are consistent with the strategies teachers are to use with children.
Are based on, and focus on, identified needs of teachers, just as teachers are to base program on student needs.
Preservice-Inservice Programs on Site
Provide a learning environment like that which teachers are to provide for children.
Help teachers interact in the style that they are to use in interacting with children.

Examples of Modeling Methods for Teachers

A university or school inservice course in methods for open-plan education can be structured to use learning centers with activity cards and short contracts. The centers may deal with criteria for insuring that learning experiences of quality result from this particular methodology. They may also involve teachers in development of appropriate hands-on and experimental materials in various content fields and across-subject areas that suit a center format. Then the open-inquiry approach permeates the inservice instruction.

A school-sponsored workshop in collecting pictorial data, audio data, and realia in sociocultural or institutional environments for use in social studies teaching can be modeled rather than merely being described. The leader locates the workshop in an environment new to the teachers; divides them into small investigative teams, giving each team a polaroid camera, a tape recorder, and a "treasure hunt" map; sends them out to discover what is going on in this new environment; and then holds a debriefing session for the teams to present what they found and discuss with the other teams what their findings signify.

Advantages

The main advantages of this model are:

- Novice teachers work with experienced teachers on innovation and improvement and see new ideas being put into action in realistic settings.
- Experienced teachers are given assistance and time for innovative

planning and teaching with resources from both the college and school district.

- College faculty learn to work with realities, and school personnel see theory put to work through their own efforts.
- Youngsters (and this has already been substantiated in research—see Lowichek, 1975) learn more and gain in achievement while the service team and education students are in the school.

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From the Bottom Up: A Proposed Model for Sustaining Support, Motivation, and Leadership in Curriculum Development

Harry B. Powell

In Britain the Schools Council is the national body responsible for curriculum development. Although the thoughts set out below suggest the need for a change in the way in which that body operates, they can also be seen as a recognition of the need for such a central body in any educational system. Colleagues who visit schools extensively often make the point that the products of national curriculum development projects are not very obvious in schools. Perhaps more important, although extensive efforts have been made to disseminate the products, the curriculum development process itself has not been widely disseminated. Does this mean that national projects are not seen by teachers as relevant or that curriculum development as a professional activity (modeled perhaps on national experience) is not an integral part of the day-to-day work of the teacher? If not, why not? It is certainly not the fault of the teachers, but rather of the way that available resources are managed. The image of a central body at

the hub of the curriculum development wheel dispatching ideas and activities along the spokes to teachers perched, anxiously waiting, on the rim, is conveniently comforting, but dangerously delusive. The image that is more likely to become a reality is one of movement from school and localized situations, where need and feasibility have been established with conviction long before any movement takes place in the other direction. The credibility of any regional or national curriculum development body depends entirely on a genuine view of supportive partnership being held by all concerned in the educational venture.

Limitations of the National Project Team Model

The assertion made above that the products of national projects have been disseminated rather than the process, was meant to imply that there is a great deal to be learned from examining the process. The typical model of a national project is that of an idea for a project being presented to a committee representing various interests within education. More often than not, the idea is that of a small group of people, and it is presented by the probable director of the project. The question of its feasibility, or of its being a response to the perceived needs of teachers, is often the subject of project activity, and is left to the judgment of the committee considering the funding of the project. If the project is funded, a small team of three or four members comes together to produce trial materials. The criteria for selecting this team will frequently not include experience and skills in working with teacher groups; these often have to be acquired on the job. In addition, the team is often on a tight budget, working within a limited time scale, covering vast distances (in order to involve people in different parts of the country), and so expending precious energy and resources on travel. The project might typically become involved with 20-40 schools throughout the country. The view of the activity from these trial schools is valuable. Frequently the teachers concerned with the project have not been involved in a similar type of activity before, their contacts with project staff and other trial schools are very limited, and much depends on their ability to interpret the requirements of the project. There is evidence to suggest that these interpretations vary considerably from school to school. Such variations have to be seen against the background of a comparatively tiny group of trial schools and thus a tiny group of trial teachers. A number of questions have to be asked about such work. The questions follow, along with my answers to them.

- Do project staff need training to acquire the skills that they will need in working with teacher groups, and that are not directly related to the subject of the project? Obviously they do.
- Is it necessary to cover an unmanageable geographical area to be able to generalize results? How much more significant for school A are the results from school B, 100 miles away, than those from school C, 10 miles away? If an objective is to make the project's results more acceptable to schools in the same area as school B, then a somewhat larger project team and trial schools group might be needed.
- Who appears to benefit most from this type of project? Predictably, and almost exclusively, the gains are to the project team and trial teachers. These benefits accrue as the result of their involvement in a process rather than their exposure to new materials.
- Why does a project's circle of influence not widen considerably, and why do teachers in trial schools gain so much from involvement? As suggested above, involvement is one key factor in the curriculum development process; the other key factor is the long-term support offered by colleagues and project staff throughout a difficult period of change and adjustment.
- Does the curriculum development habit remain after the project ends? Often, both regrettably and understandably, it does not.
- Does a national curriculum development project identify the real needs of the schools? This has to be related not only to the "take up" of project materials, but also to the use being made of those materials in schools.

A Self-Perpetuating Curriculum Development Scheme, Locally Focused

If there is any substance to the questions and answers suggested above and the assertions made earlier, one has to conclude that curriculum development is hard work, requiring the acquisition of new skills and extra resources, sustained over a long period of time. This conclusion certainly implies the presence of consistent and readily available support and leadership. Considerations such as the relevance of the activity to one's own teaching situation, the children in one's class or school, the available resources, the skills and needs of teaching staff—all suggest an examination of the forces that motivate teachers to involve themselves in what is an extremely time-consuming and fatiguing activity. Indeed, unless curriculum development becomes self-perpetuating, in the sense that it is the best possible way of cop-

ing with the day-to-day needs of the school and the system as a whole, it will be seen as a bandwagon going nowhere, drawn by inappropriate academic horses, and passengered by professional expedients. Although the research image of national curriculum development attracts and motivates many energetic teachers to become involved, they are not a significant enough proportion of the total teaching force.

All of this argues for a much greater emphasis and focus on the local situation. In Britain we have focused far too much on curriculum development at the national level. If it is acceptable that the very nature of a realistic curriculum development activity is localized—fitting the needs of children, teachers, and the community—then the support and leadership must be sought, encouraged, and provided at the local level, inside and as a part of every school. Furthermore, motivation must be provided at the same level by forging a strong link between curriculum leadership and career that forms the basis of an openly discussed staff development program.

Staff Development for Curriculum Development

Such a staff development program would aim to ensure that at every stage in their career, teachers can obtain relevant experience and training appropriate to that stage. Experience in leadership and support would be associated with the curriculum development process, and ultimate responsibility for running schools would be given to the teachers with proven ability to carry colleagues with them in tackling problems that are central to fostering quality in education. This process of training and selection (at best, self-selection) throughout a teacher's career must be used to energize and motivate the curriculum development process and to offer consistent support to the teachers involved. It must train for and identify curriculum leadership so that, in turn, the work of schools is fed by the involvement of teachers in the staff development program. This essentially localized activity would identify the need for work at a national level by a process of elimination and would establish the feasibility of such work; it would make teachers more aware of the implications of national research; and it would establish a network of professional friends and experienced leaders through whom national curriculum development could be sustained.

If a staff development program is to achieve these objectives, we must identify the skills and experience needed for this type of leadership so that both can be built into every stage or activity. The required skills and experience fall into two broad categories. First, the unique

characteristic of a school is that it is a place where learning is structured, and this structuring is the definition of curriculum. Thus, we must posit as an essential career requirement as wide as possible a knowledge of the curriculum. Ultimately choices have to be made from a range of possibilities. The establishment of acceptable criteria for making choices obviously depends on a wide knowledge and experience of the various curriculum areas (and their development), the resources and techniques that are available, and all the practical difficulties that are involved in implementation. Second, any development is often the story of individuals who can make things work. Thus, a potential leader in education (as elsewhere) must be able to motivate and encourage people to give their best. Experience in motivating others is essential at every stage in an ambitious teacher's career, if only to establish his or her own shortcomings. National projects have much to teach us about this ability to bring about changes in attitude—to get individuals to make personal commitments to causes and then to ensure that they become part of a network of mutual support. These are skills that teachers should be encouraged and allowed to practice in progressively more demanding situations.

To summarize so far, first, there should be a complementary relationship between local and regional or national curriculum development. Second, the movement of ideas and activity must be from local to regional to national levels before movement takes place in the other direction; realistic regional or national activity depends on a well-established local foundation. Third, the energy to sustain local curriculum development activity comes from the involvement of ambitious teachers in an overt staff development program (which is the network through which other levels operate). Fourth, the concepts that are fundamental to establishing such a program are personal professional development and school-focused inservice education—that is, inservice education that meets the perceived needs of a school and has real payoff. Finally, this kind of organized curriculum development would cost less than present arrangements, not more.

School Clusters with Working Parties Assigned to Curriculum Development Projects

Let us look at how the above scheme might work out in practice. In our example we will use the British primary schools, that is, schools for children up to the age of 11 years, where the vast majority of teachers teach all aspects of the curriculum.

First, we must identify a unit with which to work. Four or five primary schools that feed into a secondary school would make a manageable unit. We will call that unit a catchment area. The individual school is not the best place to begin because of the possible gains from generalizing on the experience of a wider group of teachers and making the best possible use of the talents that exist within the catchment area. This point will be referred to again later.

The headteachers (principals) and teacher representatives of the schools would meet to identify the inservice needs of the area. (Although in Britain each school has the freedom to draw up its own curriculum, a consensus on a curriculum model should be possible.) To start, the group would agree on the curriculum areas to be dealt with, such as language, mathematics, discovery work, and aesthetics. This group of headteachers and teacher representatives would be concerned about curriculum balance, priorities, and planning and would act as an inservice steering group for the remainder of the activities.

A catchment-area working party would be set up in each curriculum area and be briefed by the inservice steering group. Each school would have one teacher representative on each working party. The representative would probably have a curriculum responsibility in his or her own school that reflected the work of the working party. The charge to each working party would probably be to carry out a survey of work within catchment-area schools in the designated curriculum area; to report on good practice; to report on resources in use; and to make recommendations on the possible development of that particular area, including the inservice education that might be necessary.

Each working party would develop its own particular strategy. In a working party on aesthetics, for example, early discussion might focus on what was taking place in the schools that should come under the heading of aesthetics, and also what might be included but was not happening. There would be a preliminary sharing of views on aims and objectives and a decision on whether or not to report these to the inservice steering group. Then the working party would decide what was to be surveyed, possibly making out a checklist and arranging monitoring visits between schools to ensure that working party members were looking for the same things. The working party would also fix a target date for completion of the survey.

Each working party member would return to his or her school and involve the whole staff in a discussion so that all teachers could be made aware of the objectives of the survey and become actively involved. Individual teachers would reflect on their own objectives,

practice, assessment, resources, etc., in contributing to the school's view of itself to be shared with other schools. Depending on the size of the school, a working group might be set up within it to assist its representative. A good deal of in-school activity would probably occur, and the skills of the working party member would be extended to the full in generalizing the skills, talents, and good practice within the school, as well as in establishing in the minds of teachers the need for a curriculum development cycle. The school's representative would eventually take back answers to the working party's questions, information on good practice, possibly some case studies, information arising from a discussion of what might be as well as what is, and a fairly clear picture of the school's needs.

When each school's findings were brought back to the working party, an attempt would be made to identify areas of similarity and difference. The good practice identified within the catchment area would also identify the most credible curriculum leaders, and a valuable layer of activity could be developed by the exchange of strengths of individual schools. In the case of aesthetics, individual schools might have gifted musicians, sculptors, painters, dancers, etc., who would be readily accepted at other schools. The same would be true of resources.

The working party would then address the last part of its charge—to recommend likely or possible developments within the catchment area. Members of the working party would have shared their discussions with teachers in their own schools and would therefore all have a starting point. Their exchange might not uncover all the possible alternatives, and they might well want to consult experts outside their own schools before writing their recommendations. The recommendations might be for forms of inservice work to be developed; for help in assessment of children or the further evaluation of work in schools; for exhibits of resources; or for the setting up of a curriculum development project within the catchment area, associated with a regional organization and staffed by teachers from their own schools under the direction of someone with the necessary skills and expertise from an advisory or university staff.

Based on the working party's report, the inservice steering group would decide on priorities and any subsequent action, importing experts and advice when necessary. It would also feed its thoughts upward into the system so that the gifts and talents from within its own schools would be more widely used, if needed, and so that the particular curriculum development needs of its schools would be matched

against the needs of other schools. In this way curriculum development project research on a regional or national level would be informed by the clearly identified needs of the schools themselves. If enough similar requests emerged, the action required could be taken more confidently. As an example, if enough teacher working parties on aesthetics expressed concern about the lack of work in this area of the curriculum, a regional or national project might be developed to assess children's progress in a range of aesthetic activities.

Whatever work was commissioned by the inservice steering group would be monitored and fed into schools by the working party members concerned, and questions of integration of subject matter would be considered.

The staff's review of the school's practice must be seen as an essential part of the cycle of activity within each school; it would reflect and sustain the activities of the group of schools while identifying the peculiar needs of each individual school—needs that would be catered to individually at the school level.

A great deal has been accomplished by many national curriculum development projects, often in spite of great difficulties and as a result of individual dedication. Regrettably most teachers still see such developments happening at some distance, and as something done to them rather than by them. The thoughts and ideas above suggest a means of reversing these impressions, justifying and describing a curriculum movement built up from professional grass roots, sustained by a laudably professional self-interest, and having regard for what schools are all about.

Preservice-Inservice Curriculum Development with Teachers

Masha K. Rudman and R. Mason Bunker

The Integrated Day Teacher Education Program at the University of Massachusetts, Amherst, is based on the advisory model. Provision is made for regular one-to-one relationships between advisor and teacher-client, but such relationships are only one of several elements in the Program. The advisor serves as a resource person to teachers, interns, and administrators alike and performs in a variety of modes.

He or she conducts seminars, visits classrooms, offers workshops, participates in conferences, and, in general, responds to the needs of novices and experienced teachers as they work together in a local school setting to enhance the opportunities for learning in all curriculum areas.

The Integrated Day Program is intrinsically linked with the University. Thus, the preservice and inservice education programs form a continuum; interns are sent to inservice teachers who share a philosophical and experiential base with others in the Program. Administrators also take courses, attend workshops, and provide leadership when appropriate. A strong support system is built in this way.

To avoid any feelings of isolation and to ensure economic feasibility, the Program requires that a minimum of two teachers and one administrator participate actively each semester. Expectations on the part of the school as well as the Program are clearly specified at the beginning of each semester and in conferences throughout the semester.

Further, the Program functions economically because of its University base. Regular University faculty, committed to common goals, devote instructional time and energy to both the undergraduate and inservice participants. All of the participants serve several functions: They are learners, colleagues, and instructors, depending on the perceived needs in a particular situation. Teachers serve as resources to each other as well as to their interns. Few outside consultants are sought or needed. Program faculty, doctoral students, resource personnel, and local school personnel serve the system. Relationships are maintained over a period of at least three years. This commitment on the part of the schools and the University provides security and the opportunity for all participants to grow slowly and consistently. Follow-up of events and activities is always provided. There is no need for one-shot isolated experiences.

Courses and other learning experiences make use of field sites. Some courses are held at the University, but many make use of space, materials, and time contributed by the schools as part of their commitment to the Program.

The Integrated Day Program subscribes to the process of diagnosing, designing, and rediagnosing from a child's failure or success, but it adds several assumptions that affect the way the Program interacts with its clients. A major thrust of the Program is toward self-direction; to this end, all learners are involved in decision-making about the design, implementation, and evaluation of their programs. A central conviction is that learning is the discovery of personal meaning,

that curriculum development is a shared decision-making process leading teachers and learners to diagnose strengths, uncover possible next steps, articulate aims, generate goals, create learning experiences, select resources, design environments, and evaluate growth. Because people learn to do by doing, learners are actively involved in solving real problems. Learning is viewed as a part of growth, which takes time and is a continuous process. The Program focuses on participants' strengths so that they may build on success and grow in a positive direction. Academic skills are valued and used as tools for solving real problems.

In the Integrated Day Program we believe that teachers will begin to take full responsibility for the curriculum development part of their jobs as universities and school districts form collaborative relationships, make decisions cooperatively, and support one another mutually.

Curriculum Development in Teachers' Centers

Kathleen Devaney

Teachers' centers have sprung up almost spontaneously in school districts in all parts of the United States over the past several years. They are responses to the pressures on elementary school teachers to refresh their professional repertoires in the face of profound changes in schooling: New curriculum places less reliance on textbooks, workbooks, and the teacher's lecture; it varies subject matter, learning style, and learning pace in each curriculum area. Racial desegregation and mainstreaming policies, and drops in school district population and finances have brought about large increases and qualitative changes in classroom populations.

There is no one model for a teachers' center. Each embodies unique local resources and tries to serve unique local needs. Some centers serve a whole school district, a few serve several districts, others draw teachers from just one zone of a district or just one school. Some centers are independent, most are school-district or university sponsored; some are general in subject matter, others concentrate on a single subject such as math. A few have served substantial numbers of secondary school teachers, especially those in junior highs, but most cater to elementary school teachers. A center typifying the whole

range of American development of this new institution does not exist, but in general, centers combine curriculum development and inservice education. Four other characteristics tend to typify teachers' centers:

- They offer teachers fresh curriculum materials and/or lesson ideas, emphasizing experiential, exploratory, frequently individualized classroom work—not textbooks and workbooks.
- Teachers' centers engage teachers in making their own curriculum materials, adapting district-provided materials, and exchanging teacher-developed materials.
- Teachers' center instructors are themselves classroom teachers, sharing their own practical, classroom-developed units or strategies; or they are advisors—formerly classroom teachers—who view their job as stimulating, supporting, and extending a teacher in his or her own directions of growth, not implementing a new instructional model or syllabus.
- Attendance at a teachers' center is voluntary, not prescribed by the school district. If indirectly required (for instance, as a way to spend inservice time or to earn salary-advancement credits), programs are based on teachers' expression of their own curriculum development or training needs, and several choices are offered.

Although British teachers' centers have had a strong influence on the practice in American teachers' centers, our centers are not an import from Britain. They have roots in native educational viewpoints and experience, particularly in the body of practice that views the child's education as inseparable from the whole context of the child's experience in family, community, and environment, and that thus attempts to make schooling draw from life at large. In classic Deweyism or progressivism the social aspect of experiential learning took precedence. As a result of the curriculum development movement of the 1960s, with its emphasis on the learning theories of Piaget and other cognitive psychologists, the educators who have founded teachers' centers believe that teachers can use their students' surroundings to facilitate students' intellectual growth as well as social growth by providing natural, playful but mentally stimulating, teacher-monitored interaction with environmental objects, living things, and situations.

Early teachers' centers were created as work places where teachers could learn through do-it-yourself experience how to transform the child's most natural experiences and expressions into curriculum, or —in the reverse process—how to translate curriculum mandates into experiences the child could recognize and respond to. Creating multi-

ethnic curriculum materials and language arts experiences for classrooms undergoing desegregation has been a common priority for teachers' centers.

Teachers' centers might be viewed as an expression of another trend that began in the 1960s—the deschooling movement. Teachers' centers are a classic example of what Ivan Illich (1971) in *Deschooling Society* called "learning webs" or networks:

> I believe that no more than four—possibly even three—distinct "channels" or learning exchanges could contain all the resources needed for real learning. The child grows up in a world of things, surrounded by people who serve as models for skills and values. He finds peers who challenge him to argue, to compete, to cooperate, and to understand; and if the child is lucky, he is exposed to confrontation or criticism by an experienced elder who really cares. Things, models, peers, and elders are four resources each of which requires a different type of arrangement to ensure that everybody has ample access to it . . .
>
> What are needed are new networks, readily available to the public and designed to spread equal opportunity for learning and teaching. (pp. 76, 77)

Is it contradictory to describe the teachers' center both as a move to reform education and an example of doing away with schools? Cremin (1976) emphasized that we Americans need to reformulate our view of education so that people and institutions that attempt to enrich and embellish schooling, through conscientious use of other opportunities for learning in the natural and social environment, are not viewed as opposing the formal school system. Rather, these enriching and expanding experiences would be seen as intrinsic and legitimate components of a wider configuration of institutions—family, church, libraries, museums, television, organized work—that educate, not haphazardly but quite purposefully, throughout our whole lives.

Cremin did not include teachers' centers among the institutions in the configuration—institutions that not only teach their own curriculum but also "mediate," "screen," and "interpret" (p. 23) the teachings of all the other educative institutions. But he aptly described what a teachers' center does as it undertakes to invent or refresh curriculum. The successful center not only offers its own curriculum to the teacher, but it selects, explains, combines, and heightens pieces of curriculum available from the university, the library, museums, the natural environment, local government, and parents and citizens.

In the view of teachers' center leaders, the school district curriculum development task is never-ending, and it must be teacher-involving; it must be immediate and concretely practical but long-term and thought-inducing as well. Where school desegregation or mainstreaming creates a multiplicity of learning backgrounds and styles in a single classroom, a teacher must continually collect, adapt, or concoct new curriculum materials to fit particular children and to help children understand and value each other. Curriculum development for such classrooms must go hand in hand with inservice education, and neither can properly be conceived only in terms of rejuvenating shots from experts.

It would be silly to maintain that all teachers are eager, self-renewing students of their profession and practiced inventors of custom-made curriculum. But the vast lot of teachers want to do their job better, and they understand that a successful lesson is not simply an expert's packet of subject matter, but a blend of subject matter, the student's learning status and style, and the teacher's teaching style. Teachers' centers show that it is not visionary to expect ordinary teachers to work hard and voluntarily, provided they can get help in revamping their own curriculum.

The basic stock-in-trade in many teachers' centers is a "make-it-and-take-it" workshop: Teachers construct some new child-appealing lesson and take it back to their classrooms. Emily Richard, director of the Learning Center in St. Louis, points out:

> A make-and-take workshop can be gimmicky, but it also can be real. And it's a start for teachers who have never had a hand in their own curriculum. Going along with the making, there needs to be a lot of critical discussion, but in the context of something that's real to teachers. Curriculum materials are a way of communicating with kids, and so also of communicating with teachers.[15]

Communicating over curriculum—literally choosing, adapting, or developing materials—is a way of diagnosing what teachers need. It is more accurate than a generalized needs assessment instrument.

Sharon Feiman, University of Chicago, says:

> When a teacher has a question or a problem and *has formulated it*, then there's a place for outside information and ideas. Until then she's inundated with information she can't hook up with anything she's familiar with. One instance or episode is *not* a problem. Part of the professionalization has to be teachers clarifying for themselves *what the problem is*.[15]

[15] Stated in a conversation with the author.

Flooding teachers with information is the flaw in a curriculum materials resource center, which is no more than a storehouse of "validated products." What teachers need is supportive, constructively critical help in importing new ideas into their classrooms. Such importing almost always involves some adaptation or even substantial reinvention of curriculum materials. "Innovation" and "individualization" take time to rethink the students' needs, the subject-matter content, and the teachers' capability. A St. Louis teacher, Pat Budde, describes what she needs for curriculum development:

> If I am, in fact, going to select appropriate pieces of curriculum to fit my own students, my basic need is to have a variety of resource people whose practical experience I can respect, and the ability to use one of those people, not in a one-shot workshop but over time, in as much depth as I am ready for. It takes more than two days or a weekend or a month to put together curriculum. You have to use resources, reflect upon what happens then with kids, and go back and revamp what you're doing.[15]

Next to its priority of providing appropriate and significant learning materials and experiences for children, a teachers' center holds a priority of guaranteeing teachers "a measure of educative autonomy" and helping teachers develop and pursue their own educative style. The teachers' center aims to weave a "network of educationally significant others" for the learning teacher.

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Advisory, Intercultural, District-Focused, and Other Models

E. Brooks Smith

Traditional supervisory systems have become in some districts a consultant service (nonadministrative) to individual teachers and small groups of teachers working out their curriculum and instructional problems and questions. Thus, school district staff assist teachers in self-assessment and peer assessment and evaluation of the impact of their curriculum planning and instructional strategies on students.

These "advisors" assist teachers in collecting objective data on teacher actions and student responses. They help a teacher or group of teachers create a higher level of curriculum substance and teacher-learner interaction by raising the level of questions at strategic points in the curriculum development process and providing easy access to the materials the planners need.

The Teacher Center as a Consultant Service and Advisory System

Some teacher centers, for example, have a telephone consulting service for teachers. Others are developing small-scale teacher resource centers in local schools or in a central location for small clusters of neighboring schools. The advisor or tutor concept has been adapted to the supervisory role in some settings. Often advisors are drawn from the teaching staff itself; in some places the role of advisor is rotated on a one- or two-year basis among the teachers of a school. Such personnel become a curriculum development peer network encouraged and supported by the administration although usually not chosen by it. In at least one instance these peer advisors are given time to become well acquainted with the materials and resources of their district's large, combined teacher center/media resource center and to serve as a daily "go between" for the teachers, carrying new ideas and news of the center's activities to their peers. They also serve as an advisory group to the center director for planning "make and take" activities and "idea stretching" programs.[16]

A variation on combining a regional media resource center with a cluster of local district teacher centers that have a local advisory staff of curriculum leaders is to rotate the curriculum leader post among teachers in a local school every two years. Those teachers interested in curriculum leadership are nominated by the faculty and given time to work at the media center and their local teacher center as a consultant or advisor to local schools for the two-year period. During that time they are involved in a curriculum leadership training seminar conducted by the regional advisory or supervisory staff with involvement of local university staff.[17]

Another possibility is to locate a center in a school where experi-

[16] Drawn from unpublished material by Nancy Murray, Teacher Center, Windsor Separate School Board, Ontario, Canada.

[17] Drawn from unpublished material by Bryan Taylor, West Glamorgan Education Authority, Wales.

mental curriculums are being tried and tested. Through the center this research-and-development laboratory school is then linked to a network of cooperating schools working out various aspects of the new curriculum. Teachers in the experimental school become the consulting teachers for the network. One day every week or two they visit network schools while teachers in those schools are given time to visit the experimental school or another school in the network to observe and participate in mutually planned curriculum development activities.[18]

Locally Focused University Graduate Programs—Professors as Advisors

The graduate course, like the school district workshop, has been the butt of teacher complaints that such inservice work is in the main irrelevant to the school and classroom situation. Many graduate courses serve as training for professional advancement into different roles and positions in education. However, there have always been graduate courses that have purported to help teachers in curriculum development and instructional improvement. These courses have come under most attack. Recently many teacher education institutions have reformulated them under the rubric of "on-site" or "locally focused" curriculum development programs. The experimental courses range from a series of credit-bearing and locally based workshops or practicums to clusters of courses and seminars offered in school communities where the geography, sociology, culture, politics, and economics of the community are studied in relation to seminars and practicums for developing locally relevant curriculums or infusing new curriculum and instructional ideas into existing school programs. The professors take on a local advisory role in such collaborative enterprises.

Intercultural Inservice Teach-In Exchanges—Teachers Advise Each Other

Another trend is multicultural and intercultural inservice programs being developed in some Teacher Corps and bilingual education projects as well as in the comparative education field. Such programs often include "live-in" teach-in practicums that heighten the perspectives of pairs of teachers from different settings as they analyze dur-

[18] Based on a report by Diana Jordan, Research and Development Laboratory School Program, State University of New York at Potsdam.

ing a two-to-three week intervisitation period the cultural reasons for the differences in their curriculum and methods. Such an experience not only sensitizes a teacher to another culture's education effort; it also causes that teacher to be more open to change in viewing the educational program of the home school.[19] This inservice approach is a refinement of the old teacher intervisitation day, strengthening it with cultural and personalizing dimensions that motivate the rethinking of home curriculums with widened perceptions, especially multicultural ones.

Locally Focused School District Programs

There has been a move in recent years to concentrate curriculum development efforts in one school faculty at a time. It has seemed sociologically sound to involve all school personnel in the initiation and development of curriculum change. Often compromises have to be made to gain everyone's commitment; but compromise is thought to be better than creating divisions among the faculty as small pockets of teachers go their own ways while others stand, criticize, resist, and impede advancement.

To reach a compromise or a consensus for curriculum change, time is needed, especially professional time, work-day time. Resources are also needed, easily accessible to teachers. A team of advisors is oriented toward working with a particular school's faculty. The advisors then become a part of the school staff for awhile to work with the faculty on curriculum and instructional problems. They "live in" long enough to get the movement for change well established. Then follow-up sessions at later intervals can be effective.

Some secondary schools in Britain have attempted locally focused curriculum development projects to comply with the goals of mixed-ability teaching or integrated studies. In the United States many Teacher Corps projects have explored locally focused inservice curriculum development. This approach is compatible with involving the local community in curriculum development planning. The advisory teams can move from school to school and concentrate their efforts, staying long enough to help a faculty assess the results of its planning.[20]

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[19] Drawn from unpublished material by the author, Wayne State University, Detroit, Michigan. A documentation of the impact of this program on the teachers in both settings is in progress.

[20] Drawn from unpublished material by William Greenwood, Wigan Education Authority, England.

Professional Association Models [21]

Professional organizations have been, in the past, agents for teacher involvement in curriculum development to some extent. Their national, state, and regional conferences, workshops, and topical seminars and their publications have provided school personnel with guidance for improving curriculum and instruction based on research and deliberation. But these mechanisms have never really activated teachers toward organized curriculum development. Their one advantage has been that they are free and open (in the sense of the freedom of the press). Teachers are free to read them and act or not act on their recommendations.

An example of the direct involvement of an association in local curriculum development was the Curriculum Study Programs launched by the Association for Childhood Education International a number of years ago. The programs were organized around a different theme each year. Inservice materials were prepared at national headquarters and distributed to local branches, which then set up voluntary workshops in some local districts.

A consortium of professional and teacher organizations could revive this model and create a national network of curriculum development activities. Professional publications could be used to report, share, and disseminate the work of the network. By this means and others the profession could begin to regain some rightful control over the chaotic situation of present-day curriculum development.

Perhaps the time is ripe to extend the professional organization's role in curriculum development to being the key catalyst for involving teachers. It has even been proposed that teacher organizations with other professional societies take leadership at local, state, and national levels in proposing curriculums and devising the collaborative means by which teachers, administrators, community authorities, and university faculty could work together on curriculum development.

Interdisciplinary and Integrative Models [22]

Subject integration arises from the desire to pursue topics of immediate interest laterally over a widely defined area. It seeks to give greater cohesion to the curriculum as a whole at a time when the curric-

[21] Drawn from unpublished material by Monroe D. Cohen, Association for Childhood Education International, Washington, D.C.

[22] Drawn from unpublished material by Antoinette Washington, University of Maryland at Baltimore.

ulum has become dangerously divisive and when, all too often, no clear pattern emerges from the separate pieces of the jigsaw. It strives to develop whole personalities by restoring some of the wholeness to knowledge. It is achieved by regrouping the standard subjects, or certain aspects of them, in a fashion more related to the world in which the student lives. It is a more rational and humane approach to curriculum design than division of knowledge into isolated subjects, completely arbitrary to the recipients and their present social setting.

Specialization and fragmentation in the larger world of knowledge have had their concomitant effects on the curriculum. The influence of the subject-matter specialist has been too persuasive. Insufficient attention has been given to the needed interrelation of studies, and the relevance of school studies to the life of the learner and the problems of the larger society. If the curriculum is to have relevance for social problem-solving, a new synthesis will be required. The challenge to curriculum designers will be to include inquiry, research, and discovery methods as part of the learning experiences of youth.

For generations students have learned to view the world generally in separate entities, with little understanding of how things are related to each other. For example, environmental degradation, whether it be through air and water pollution, atmospheric nuclear tests, or the misuse of the world's natural resources, is multifaceted. These types of issues require teachers to be more global in their teaching so that students will understand the need to interrelate. Two more examples are cross-cultural conflict and intergroup conflict, which are localized problems only in terms of space and time; the implications for all of us are not limited. John Muir's statement concerning nature—"When we try to pick out anything by itself, we find it hitched to everything else in the universe" (as quoted in Guild, 1973)—should be no less true for learning situations that are part of the student's experiences in school. We as individuals experience integrating in our everyday lives, but often it is difficult to separate out all the stimuli that bombard us—the aesthetic, cognitive, philosophical, poetic. An integrated approach to curriculum helps both students and teacher recognize and understand those stimuli as parts of the whole.

The critical element in an integrative type of curriculum framework is the emphasis on process education. It is becoming increasingly apparent that an educative structure must move from a static, traditional, rigidly defined set of facts and concepts to a more dynamic, continuous process of learning. Schools must teach learners how to continue learning. This approach to school curriculum stresses the personal

development of the individual in relationship to the knowledge. Moreover, this philosophy calls for a closer working relationship between students and teachers in designing and implementing the curriculum. The school community plays an important role in the designing of activities for students. The school becomes a vital organ in the living community, and teaching is stimulated by its importance to the community. In effect the school demonstrates its worth by contributing to the community.

If the curriculum is to have an authenticity characteristic of life itself, then interdisciplinary and integrative modes of curriculum development need to provide a yield beyond the sum total of the individual disciplines. Methods for insuring integrated results need to include surveys of what concepts students have learned, techniques for getting student feedback, mechanisms for getting community input and reaction, and multiple objectives combining the cognitive, affective, and psychomotor domains. Following is an example of multiple objectives:

- expressive objectives, which reconstruct the modern concepts, attitudes, and generalizations that need to be encountered, formulated, and expressed by learners—statements of the ideation expected such as: Auto engines interact with the environment; trade-offs are required;
- affect objectives, which infuse feeling, valuing, and judging dimensions into the expressive objectives;
- process objectives, which state the inquiry procedures that need to be used by learners to accomplish goals, such as classifying, analyzing, inferring, valuing, etc;
- skill objectives, which describe the manipulative and memory skills that need accomplishment, such as mapping and charting skills or content reading skills;
- action objectives, which propose behaviors that could enact the ideas being developed within school limitations, such as a schoolyard environmental cleanup;
- management objectives, which allow for learning to be accomplished individually, in pairs, or in small or large groups.

An interdisciplinary / cross-disciplinary / integrative, problem-centered curriculum may not be possible, but at least a careful evaluation can be made of more traditional curriculums as they relate to relevance for survival in today's society, and the unifying questions of humanity's predicament on this small island, Earth, can be addressed.

Models for Adapting Formal Curriculums to Local Schools and Classroom Situations

During the last couple of decades there has been such a proliferation of packaged and programmed curriculums that there is almost a glut on the market. Many of these curriculums present interesting innovations, but they are too universal and uniform. Teachers have to make local adaptations or run the risk of creating learner boredom or learner failure because the materials are either irrelevant to the backgrounds of the learners, too difficult, or too easy. Many subject-matter textbooks have too high a concentration of complex concepts per lesson, which creates a concept overload for learners. Teachers then have to break down the lessons to introduce concepts more slowly, with examples and related experiences. The teacher has to plan in terms of different levels of thinking in the learning group and plan optional activities. Some of the packaged supplementary materials tied to textbook systems help to alleviate these situations, but packaging for every teacher in every setting is hardly possible.

Inservice curriculum development programs need to consider adaptation as part of their mission with teachers. The teacher center has become a place where adaptation can be done. Indeed, in the British setting, Schools Council-generated curriculums take the simple form of guidelines for teachers. Teachers use teacher centers to develop their own activities and materials to implement the curriculum ideas. For example, they create trail guides for local field trips that will illustrate concepts that the curriculum guidelines set forth for learning. The trail guides are usually of a discovery type that learners use independently on the field trip. Developing activity cards and small contracts aids the teacher in personalizing and localizing the curriculum as well as in differentiating assignments.

Some textbooks and curriculum publishers are involving teacher-educator writing teams in preparing the content and materials. Some enterprising school districts have involved teachers in developing curriculum materials that the districts have then published or packaged. The use of many texts and supplementary materials has helped to resolve some of the dilemmas in using formal curriculums. In the main, teachers see the need for their students to have optional assignments and activities that allow for some learner self-selection and/or selective guidance by the teacher.

If the teacher established the practice of introducing textbook assignments creatively, each kind of thinking—memory, comprehension,

application, analysis, synthesis, and evaluation—could be taught. Devising higher level questions or appealing optional activities could enrich conventional lessons.

Although packaged materials are usually sequenced, they sometimes can be broken up and organized in different fashions to suit particular learners and learning groups. Sometimes they can be integrated into teacher-developed materials that have relevance to the local setting.

Local redesigning and packaging of formal textbook and packaged materials can be a first step in encouraging teachers to reconsider the curriculum itself. The sharing of ideas by teachers who have found creative ways to use formal materials in reaching their instructional objectives can contribute significantly to the teaching expertise of fellow teachers. Teachers who feel the need for improving the use of such materials can gradually gain confidence as they take suggestions from fellow teachers. Teachers working together on practical tasks such as these can learn to become risk-takers and consultants or advisors to one another.[23]

A District-Wide Effort— A Center for Professional Growth and Development[24]

The Detroit Center for Professional Growth and Development, supported by the state, operates two curriculum and instructional development laboratories in reading and in mathematics that have an extensive outreach capacity through a team of consultants drawn from the teaching ranks as well as from university and school staff. The consultants are available to individual teachers, groups of teachers, and school faculties by appointment or by planned program arrangements based on the expressed needs of clients. A school-based weekly seminar and workshop on a vital topic such as improving reading comprehension, with classroom follow-up, can be scheduled; or a teacher wanting some practical help—for example, in teaching the multiplication of fractions—can confer with a consultant. The laboratories are also staffed for drop-in assistance to experienced teachers, teachers in training, substitute teachers, paraprofessionals, and administrators. In addition,

[23] Drawn from unpublished material by Louie Camp, Florida Atlantic University, Boca Raton.

[24] Drawn from unpublished material by Jessie Kennedy, Theresa Lorio, and Doris Chenault, Detroit Professional Growth and Development Center, Michigan.

the Center has full-time inservice consultants in four model schools exploring different ways that a professional development center can influence a total school setting.

Although the Center is housed in the College of Education at Wayne State University, it is a school district/educational community enterprise taking place all across the city of Detroit. Its Governing Board consists of the leaders of the teachers union and the administrators union, the General Superintendent of the Detroit Public Schools, the Superintendent of the Wayne County Intermediate School District, and the Dean of the College of Education. Each institutional representative has the power to veto proposals for policy and program. In practice, however, no vetos have been cast, and programs and activities have been mounted with full support from the participating institutions and organizations.

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9

Breakaway to Multidimensional Approaches

Roy A. Edelfelt and E. Brooks Smith

A major conviction of this book is that curriculum development and inservice education are inseparable functions if school improvement is the goal. That is, curriculum development cannot take place without inservice education, and vice versa. Equally important, participation in curriculum development (and instructional improvement) *is* inservice education.

This conviction has major consequences for teachers, students, administrators, and parents.

A major conclusion of this book is that curriculum development and inservice education must be multidimensional—that they need to respond to all the factors that influence the people and circumstances of school. There is no longer in education a valid linear progression—no input-throughput-output, no planning-implementation-evaluation, no research-development-dissemination-application. Learning and teaching are too complicated to be reduced to simplistic sequential steps, and they are too dynamic to be considered in the usual research mode.

By "multidimensional" we mean that a great many factors contribute to determining what a school program becomes. Such factors are not static and constant but continuous and varied in the way they influence school curriculum. Also, such factors come from inside and outside the school. For example, the problem of helping students learn depends not only on what the teacher judges to be appropriate (even assuming there is substantial student input to such a decision) but also on parents' values, attitudes, and support for what is being taught, the political attitude of the electorate toward school, peer-group pressure, a teacher organization's collective-bargaining position, etc.

Therefore, finding closure for a book like this one is difficult. We choose not to draw conclusions. We may be at the beginning of some major reform in curriculum, but it is certainly premature to outline a new theory. More trials are needed.

But if indeed this book marks the beginning of a major reform movement, what is its method? Each major curriculum reform movement has developed new method appropriate to its approaches, viewpoints, and content. The new method has become the means for translating the reformed curriculum into practice that better realizes its aims than past method did. The "Three Rs" curriculum used recitation and blackboard and written practice exercises as its chief methods. The Progressive Era followed a Dewey life-experience curriculum and was implemented by the problem-solving approach so ably illustrated by Kilpatrick's Project Method. Further illustrations are the Activity-Unit method in early childhood education and Core curriculum for older children. We could go on with illustrations from the 1960s and 1970s by citing approaches stimulated by the work of Skinner, Bruner, Piaget, and others. Our agenda here, however, is to ask, What might the method of the new multidimensional curriculums look like, given the premises advanced in this book?

The new strategies for curriculum development, such as using classroom research, involving collaborative (profession, students, community) study teams, developing program *in situ*, and beginning where teachers, students, and community are, are multidimensional and eclectic. So method too will be multidimensional and eclectic. It will develop from the situation and draw on educational knowledge and continuing school-focused research. Objectives might not come first. They might not even be considered in the conventional sense. Many teachers begin to think about what they are going to teach, and how, by coming up with an interesting teaching idea while driving to school or on the way home or during a break. They say to themselves, "Now that would be fun to do. Youngsters would latch on to it. I think I could get a lot of mileage out of it." Then comes structuring of a plan or strategy and perhaps some thought about the general school objectives that the activity might meet and the kind of work that students might complete. Sometimes these teaching ideas come from texts, college classes, workshops, etc., but most seem to stem from the general professional knowledge and know-how of experienced teachers. If the plan does not work, it is altered during the teaching episode. Sometimes it is abandoned. The responsive teacher senses the right moves.

This way that many teachers work has commonsense wisdom. Curriculum development and the exploration of method should be geared

more to the way teachers work. Some formal investigations of process would be useful in the next phase of curriculum reform.

But method cannot be just anything that teachers do if it is to reflect multidimensional needs. It needs to be open-ended and include options for the learner and teacher.

There are many teachers, many learners, and many different educational situations. Multidimensional curriculum and method must address all of them.

A person's individual construct,[25] with its wealth of personal and generalized meanings, affective connotations, and imagery, is multifaceted. Given a group of teachers and learners, there will be a multiplicity of personal constructs, all at different stages of developmental sophistication. Obviously there is needed a concept of curriculum constructs to which clusters of optional, appropriate, and relevant methods are tied.

Curriculum constructs, unlike the unit-project plans of the Progressives or the curriculum modules of the advocates of behavior modification systems, have situational descriptions, multiple objectives in several domains, interdisciplinary content, and optional methods.

Situational descriptions deal with characterizations of the professional, the community, and the student, including their perceptions of goals and purposes (and the accompanying rationale) in a certain teaching-learning area; syntheses and compromises of these perceptions as a result of dialogue; and available resources and materials. Surveys of students' conceptual frameworks and interests are made and assessed. In sum, there is a joint commitment before going ahead.

Multiple objectives entail professional staff's projecting and expanding goals into thought and expressive objectives, process objectives, skill objectives, management objectives, action objectives, and assessment and evaluation objectives. *Interdisciplinary content* and multicultural approaches and viewpoints need to pervade these objectives.

Optional methods are suggested in guides on teaching strategies and learner tasks, from which teachers and students choose. They then interpret the strategies and tasks for their own situations. Through interschool and district networks the options are augmented, altered, diminished, or replaced. Curriculum development might begin with any one of the options and proceed to the others, in no particular order.

Some examples of these new processes of curriculum development and of teaching-learning method are to be found in the preceding chapters. Light (Chapter 3) and Gough (Chapter 7) show a collabora-

[25] This concept is an extension of ideas developed by Kelly (1963).

tive process of curriculum development using open-ended teacher guides that offer many optional routes to teachers and learners. Gough's reconsideration of the Schools Council strategies adds a new critical step to the process—a school-focused strategy with key questions for the collaborative group to consider as it becomes involved in an open-ended national curriculum effort. Method as conceived in this approach is eclectic with a persuasion toward methods that ensure open inquiry, choices, and student commitment.

Chittenden, Charney, and Kanevsky (Chapter 4) and Tikunoff, Ward, and Stacy (Chapter 5) deal with two different action-team-research approaches to evolving new curriculum and method for specific school situations. The approaches become universalized yet adaptive as more and more teams participate in ecological or personalized research processes and share results through networks. Method in their views seems to be eclectic and experimental in that findings from classroom research studies are interpolated into curriculum and method, tried, and researched again. That which is supported by the findings is put to work. Grant and Melnick (Chapter 6), who inject multicultural education as a great priority for curriculum development, add new affective processes and method that have to be included in the changing curriculum picture.

Apelman (Chapter 2) and O'Connell (the brief description in Chapter 8 of developing curriculum and method from children's questions) both suggest a methodology that is open-inquiry-based, fluid, and permanently changing. In the Mountain View Center for Environmental Education approach, the curriculum and method follow the lead of the teacher's intellectual pursuit and method of inquiry. From an inquiring teacher's ideas in contrasting new phenomena and trying to make sense out of them, flow energy and method that take hold in the classroom.

Put the new personal curriculums together with the new forms of method, and the alchemy *might* just yield the gold of continually evolving but congruous curriculum development.

More thought, discussion, and trial must take place. It may be helpful to identify a number of characteristics and circumstances that multidimensional curriculum development and inservice education require. Many are illustrated in this volume.

1. *Goals and purposes.* Goals and purposes are developed by those concerned and affected, and made public. Goals and purposes serve as a basis for planning. Present also are devices and procedures for self-correction and continual review. Goals and purposes are not the same for each student or teacher. They reflect individuality. Evaluation pro-

cedures and criteria are consistent with and related to goals and purposes, and both change constantly. The system is flexible, the mission clear and achievable.

2. *Context.* Curriculum development and inservice education are part of a school milieu, a larger context. The context has an ecological balance; a change in one element affects all the other elements. Structure, organization, budget, administration, etc., are all part of the context.

3. *Cultural pluralism.* Group diversity is fostered and capitalized on. Provisions are present to combat provincialism, to recognize and encourage differences between and within groups. Traditions and values of various ethnic and cultural groups, as well as those of national groups, provide the subject matter for comparisons; they also help enhance individuality. Internationalism is increasingly with us as transportation and communication become more accessible and less expensive.

4. *Readiness.* The most propitious moment for learning exists both in people and in time. Readiness is recognized as a matter of attitude and a function of ability. It is influenced by climate (social-psychological). Capitalizing on readiness is a matter of timing.

Choosing to participate is primarily voluntary. Where pressure exists, it is group pressure or the pressure of circumstances. Productive pressure gets internalized and becomes intrinsic motivation.

5. *Improving school program.* The largest unit in which curriculum development and inservice education are attempted is the school building. Building-level efforts focus faculty attention on the composite experience that students have under the auspices of the school. The school program is designed to satisfy the needs and interests of a particular clientele and to communicate with parents whose children attend the school. The focus on school improvement recognizes that the school is a temporary society in which students spend a substantial portion of their day for an extended period of years. The social system of the school is the context in which curriculum, instruction, and inservice education are viewed.

6. *Involvement.* The personnel who are affected by a program are involved in goal-setting, planning, implementation, and evaluation. Several sources of experience and research underscore the importance of such involvement. Involvement develops commitment and understanding. Both are seen as essential for continuation of productive experimentation. Not just education personnel, but also parents and students, are involved.

7. *Part of the teacher's regular job.* Time is provided for curriculum development and inservice education. They are seldom add-ons to a regular teaching load. The creativity and vitality to engage in school improvement are supported and nurtured. Time is available to listen, react, think, and reach agreements. Remaining conversant with developing fields of knowledge, continuing study and thought, maintaining a liberal education—all are viewed as legitimate professional activities.

8. *License to experiment.* Professional staff have a license to experiment. Innovations are discussed and explored in advance and accompanied by a defensible rationale and plan. Authorities customarily waive existing rules and regulations for experimental activity. Authorities recognize that experimentation usually results in more learning and better achievement because greater care goes into an activity.

9. *Documentation and evaluation.* Collecting information and evidence on a program is a regular part of curriculum development and inservice education. Documentation (data-gathering) reflects goals and purposes, but usually it also includes collecting other data on a program because all valuable evidence cannot be predicted. Data are collected from the perspectives of the different participants in a program —for example, student, teacher, parent, administrator. Different perceptions are seen as yielding evidence that can expand everyone's understanding and view of what is going on.

Evaluation is separated from documentation. It involves continuous, rigorous testing of hunches (goals and purposes). Precision in goal-setting and evaluation reminds participants of original purposes, but opportunities are provided for modifying or changing goals at various points as evidence and judgment dictate.

10. *Communication.* A good communication system is seen as essential. The importance of knowing what is going on is recognized. Keeping people informed is seen as one way to promote openness and trust. Goals, purposes, procedures, modi operandi, accomplishments, etc., are major topics of communication.

11. *Institutionalization.* When there has been sufficient trial, mechanisms exist to establish policy, particularly policy on process. New structures and approaches undergird new policy in the form of school district policy, collective-bargaining contracts, state laws, and state regulations. New policy is not expected to crystallize fast. While principles on which to operate are being sought, tentative policy (hypotheses) is seen as preferable. It is recognized that becoming too specific too soon can lock in practices that are still experimental, and narrow the options of teachers.

One of the reasons we are reluctant to draw conclusions is that we have overlooked some of the dimensions of curriculum development and inservice education. Among the major oversights is the political dimension. Politics has traditionally been anathema to educators, but that view is no longer realistic. Education is a matter of politics as well as substance. It is political in the simple sense of getting the votes to carry an issue; it is also political in a philosophical and moral sense—to the extent that it challenges original constitutional principles. But that is for another book—as perhaps are some of the other dimensions that we have overlooked. In this volume we present a beginning to some new thinking and action—a wedding of curriculum development and inservice education that will create major organizational change in schools and make teaching more attractive and more exciting as well as more effective. We see the teacher back in curriculum decision-making as both a major force in the local setting and a collective force in state and national educational and political decisions. Teacher power and influence appear to be the force that will open a new era of progress in American public education.

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Appendix

Outline for Interactive Ecology-Based Curriculum Development (Using Mathematics as an Example)

This outline contains questions and suggests activities that should be included in any ecology-based curriculum development effort. Throughout the outline we assume that the interactive team is involved in the generation of questions, design of data-collection procedures, collection and interpretation of data, and generation and testing of new curriculum materials and processes.

For purposes of this example we have arbitrarily set two limitations on the curriculum development effort. First, we have limited the ecological setting to the classroom. Second, we have limited the curriculum area to mathematics. With these limitations a development effort might move through the steps in the outline.

A. Statement of goals for mathematics instruction for students and teacher
   1. Student goals
      a. Should existing goals be accepted, revised, or eliminated? In other words, will goals be added, deleted, left as is, or completely revised?
      b. What implications do answers to question *a* have in terms of the broader aspects of schooling?
      c. Will goals be stated in observable terms only or in terms of students' expectations and perceptions as well?
   2. Teacher goals
      a. What should the teacher expect to accomplish as a result of teaching the entire curriculum? A portion of the curriculum?
      b. What improvements should the teacher try to make each time the curriculum is taught? How will the teacher decide where and what to improve?
      c. How should the teacher set goals for himself or herself?

B. Analysis of setting as related to mathematics instruction
   1. Place—the classroom
      a. What are the assets of classrooms in general and the particular classrooms in which the participants are working?
      b. What restrictions are imposed by classrooms in general and the particular classrooms in which the participants are working?
      c. Can physical arrangement of the classroom facilitate achievement of goals? How?
   2. Roles and interactions to be expected
      a. What role(s) will the teacher play—for example, lecturer, demonstrator, tutor, discussion leader?
      b. Which students are expected to work together? For what purposes?
      c. Which students are expected to serve as leaders? How can this leadership be used?
      d. What expectations do students have regarding learning mathematics?
      e. What expectations does the teacher have regarding teaching mathematics?
      f. How does the interactive team anticipate student and teacher expectations, student leaders, and various teacher roles to interact to enhance curriculum? To restrict the effectiveness of curriculum?
   3. Activities
      a. What activities are already available in the classroom that can be used in the curriculum? By students? By the teacher?
      b. What student and teacher activities need to be created? Which are most easily created?
      c. Based on student activities that are selected, what teaching strategies (activities) are most appropriate?
      d. How do student and teacher activities that are selected relate to the roles, expectations, and interactions that presently exist among students and between the teacher and students? In general? During mathematics instruction?
   4. Tensions
      a. What psychological tensions exist within individuals and groups in the classroom? How do these relate to mathematics teaching and learning? To the proposed curriculum?
      b. What social tensions exist within individuals and groups in the classroom? How do these relate to mathematics teaching and learning? To the proposed curriculum?

C. Outcomes

1. Teacher goals
   a. What are the teacher's goals for curriculum in general and this curriculum in particular? What goals are observable? What goals are based on teacher perceptions?
   b. Which goals may change during the teaching/learning of the curriculum? Why? What types of changes would one expect to be well founded? How can their appropriateness be established?
   c. Are teacher goals achieved? If outcomes fail to reach expectations, why do they fail?
   d. What teacher-student, student-student interactions are most productive in reaching teaching goals? Which do not meet expectations?

2. Student goals
   a. What are students' goals, both observed and perceived?
   b. Once the curriculum becomes operable, which student goals are achieved? Does the level of achievement meet the students' expectations?
   c. What helps students most in learning the curriculum—for example, activities, interactions?
   d. What preferences do students have regarding curriculum content, process, etc.?

3. Nonparticipant-observer information
   a. As curriculum becomes operable, what events/interactions occur during the teaching/learning of curriculum?
   b. What are the qualitative effects of various teaching/learning events on participants?
   c. What influence does the teacher have on students? What influence do students have on the teacher?
   d. What events facilitate/detract from the achievement of teacher and student goals?
   e. Are the students and the teacher making progress toward appropriate types of interactions and classroom setting as well as skill and knowledge acquisition?

4. Trainer
   a. What are the implications of curriculum for the general field of teacher training?
   b. What data-collection techniques do teachers need to learn in order to analyze setting and outcomes?

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